Background Report on the Clinical Laboratory Industry

Final Report

Submitted to

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The statements contained in this report are solely those of the authors and do not necessarily reflect the view or policies of Research Triangle Institute or the Health Care Financing Administration.

Contents

Preface xiii

Executive Summary ES-1

1 Introduction 1-1

1.1 Research Topics 1-1
  The Structure of the Clinical Laboratory Industry Nationwide (Chapter 2) 1-2
  Case Studies: The Local Market Environment in Tennessee and North Carolina (Chapter 3) 1-2
  Lab Operations and Processes (Chapter 4) 1-3
  Recent Experience with Competitive Bidding for Lab Services (Chapter 5) 1-3

1.2 Research Approach 1-3
  Data Analysis 1-4
  Interviews with LTAC Members and Other Experts 1-4
  Literature Review 1-4
  Synthesis and Recommendations 1-4

1.3 Lab Data Sources 1-5
  CLIA Provider File 1-5
  Physician/Supplier Procedure Summary File 1-7
  Carrier Claims Data 1-8
  Clinical Laboratory 100% Standard Analytic File 1-8
  Outpatient 100% Standard Analytic File 1-9
  Lab Procedure Definitions and Timing 1-9

1.4 LTAC and Other Expert Interviews 1-10
  Methodology, Presentation, and Interpretation 1-13

2 The Structure of the Clinical Laboratory Market Nationwide 2-1

2.1 National Market Share Data 2-3
Test Volume by Sector 2-3
Revenue by Sector 2-9
The Independent Lab Sector 2-11

2.2 Interstate Transport and State Market Shares 2-16
Interstate Transport 2-16
State Market Shares 2-20

2.3 Medicare Part B Clinical Lab Trends 2-24
Volume and Allowed and Submitted Charges 2-24
Independent Labs 2-24
Individual Procedures 2-33
Demonstration Tests 2-55

2.4 Antitrust and Office of Inspector General Actions 2-62
Antitrust 2-62
Office of the Inspector General 2-66

2.5 Financial Performance and Fee Trends 2-71
Recent Financial Performance 2-71
Fees 2-74

2.6 Lab Industry Technological and Economic Trends 2-75
Lab Cost Components 2-75
Lab Cost 2-76
Integrated Costs of Care 2-76
Individual Lab Data 2-76
Perceived Cost Trends 2-77
Profits 2-77
Overpriced and Underpriced Procedures 2-77

2.7 Role of Managed Care 2-79
Bidding on MCO Contracts 2-79
Pull-Through 2-80
Tennessee Labs 2-80
Statewide Bidding 2-80
Networks 2-81
Other Issues 2-81
Information Systems 2-81

3 Case Studies: The Local Market Environment in Tennessee and North Carolina 3-1

3.1 Tennessee 3-3
 3.1.1 High-Volume Test List 3-3
 3.1.2 Locational Analyses 3-20
 3.1.4 The Memphis Market 3-48
 3.1.5 Medicare Part B Clinical Lab Test Trends 3-50
 3.1.6 Part B Clinical Lab Tests in Tennessee Hospitals 3-53
 3.1.7 Test Coverage by Lab Size and Type 3-62

3.2 North Carolina 3-95
 3.2.1 High-Volume Test List 3-95
 3.2.2 Locational Analyses 3-103
 3.2.3 Market Shares 3-115
 3.2.4 Medicare Part B Clinical Lab Test Trends for North Carolina 3-119
 3.2.5 Part B Clinical Lab Tests in North Carolina Hospitals 3-123

4 Laboratory Operations and Processes 4-1

4.1 Laboratory Operations 4-2
 Lab Operations in a Large Independent Clinical Laboratory 4-2
 Hospital Labs 4-9
 Physician Office Labs 4-11

4.2 Services to Rural Areas 4-12

4.3 Physician Choice of Lab 4-13

4.4 Physician's Medicare Business 4-14

4.5 Where Are Specimens Drawn? 4-15

4.6 Long-Distance Transport of Tests 4-15

4.7 Shared Labs 4-16

5 Recent Experience with Competitive Bidding for Lab Services 5-1

5.1 Managed Care Organizations 5-2
 Tennessee Managed Care Network 5-2
 CIGNA's Bidding Experience 5-4
 General Remarks 5-7

5.2 Government Organizations 5-8

5.3 RFPs 5-13
Level of Sophistication 5-13
Writing an RFP 5-13
Good and Bad RFPs 5-15
Government RFPs 5-16

5.4 Quality...5-20

References **R-1**

Appendixes

A Summary of HCFA Preliminary Data from Carriers on Independent Lab Market Shares

B Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide

C Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1992-1994

Tables

Table 2-1 Number of CLIA-Certified Facilities and Test Volume, by Lab Type 2-4
Table 2-2 Market Shares by Lab Sector by State, Based on CLIA Data 2-7
Table 2-3 Clinical Laboratory Industry Revenues by Segment 2-9
Table 2-4 Estimated Changes in Laboratory Industry Revenue and Market Share by Segment 2-10
Table 2-5 Top Eight Independent Labs and Their Nationwide Market Shares 2-11
Table 2-6 Independent Laboratory Revenues by Company 2-14
Table 2-7 Volume-Based Market Shares for Independent Labs 2-15
Table 2-8 Percent of Allowed Charges for State Beneficiaries by Carrier Processing 2-18
Table 2-9 Percent of Allowed Charges Processed by Carrier by Beneficiary Residence 2-21
Table 2-10 Part B Lab Tests Excluding Hospital Outpatient Labs 2-24
Table 2-11 Part B Lab Tests, Specialty=Clinical Labs, Billing Independently 2-25
Table 2-12 Part B Lab Tests, Place of Service=Independent Labs 2-26
Table 2-13 Independently Billed Labs Percent of Allowed Charges–Unadjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims 2-27
Table 2-14 Independently Billed Labs Percent of Allowed Charges–Adjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims 2-30
Table 2-15 Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1994 Nationwide 2-35
Table 2-16 Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1993 Nationwide 2-38
Table 2-17 Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1992 Nationwide 2-41

Table 2-18 Rankings of Top 100 Procedures by Allowed Charges in 1994, in Earlier Years 2-44
Table 2-19 Rankings of Top 100 Procedures by Volume in 1994, in Earlier Years 2-49
Table 2-20 Rankings of Procedures by Allowed Charges and by Volume, 1994 2-52
Table 2-21 Preliminary List of Demonstration Tests 2-56
Table 2-22 1994 Percent of Demonstration Tests to All Procedures 2-60
Table 2-23 Estimated Rates for a Routine Automated Test, by Payer Source 2-74

Table 3-1 Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 3-4
Table 3-2 Preliminary Demonstration Tests: U.S. and Tennessee 3-15
Table 3-3 Allowed Charges by Lab Location for Specimens Drawn in Tennessee 3-22
Table 3-4 Allowed Charges by Beneficiary Residence for Specimens Drawn in Tennessee 3-22
Table 3-5 Allowed Charges by Medicare Carrier for Specimens Drawn in Tennessee 3-23
Table 3-6 Allowed Charges by Lab Location for Tests Performed on Tennessee Beneficiaries 3-24
Table 3-7 Allowed Charges by State Where Specimens Were Drawn from Tennessee Beneficiaries 3-25
Table 3-8 Allowed Charges by Medicare Carrier for Tennessee Beneficiaries 3-26
Table 3-9 Allowed Charges by Specimen Origin for Tennessee Labs 3-27
Table 3-10 Allowed Charges by Beneficiary Residence for Tennessee Labs 3-27
Table 3-11 Allowed Charges by Medicare Carrier for Tennessee Labs 3-29
Table 3-12 Lab Coverage by County: Tennessee 3-30
Table 3-13 Tennessee Market Shares and Coverage Areas by Lab 3-35
Table 3-14 Number of CLIA-Certified Facilities and Test Volume in Tennessee, by Lab Type 3-44
Table 3-15 Independent Lab Market Shares Based on CLIA Provider File Test Volume 3-45
Table 3-16 Memphis Market Shares 3-49
Table 3-17 Part B Lab Tests Excluding Hospital Outpatient Labs, Tennessee (Unadjusted) 3-50
Table 3-18 Part B Lab Tests Excluding Hospital Outpatient Labs, Tennessee (Adjusted) 3-51
Table 3-19 Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, Tennessee (Unadjusted) 3-52
Table 3-20 Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, Tennessee (Adjusted) 3-52

Table 3-21 Outpatient Hospital Lab Tests in Tennessee 3-54
Table 3-22 Tennessee Part B Allowed Charges and Market Shares by Lab Sector 3-55
Table 3-23 Share of Nonpatient and Patient Tests at Hospital Labs 3-57
Table 3-24 Summary of the Aggregate Test Coverage by Lab Type: $200,000 Cutoff 3-64
Table 3-25 Summary of the Aggregate Test Coverage by Lab Type: $100,000 Cutoff 3-65
Table 3-26 Individual Demonstration Test Coverage 3-67
Table 3-27 Demonstration Tests with 50 Percent or Greater POL Share.......3-72
Table 3-28 Number of Demonstration Test Performed by Labs That Meet the Cutoff 3-73
Table 3-29 Number of Demonstration Procedures NOT Performed, by Area of Specialty 3-78
Table 3-30 Lab Coverage by County—Required Bidders: $200,000 Cutoff 3-85
Table 3-31 Lab Coverage by County—Required Bidders: $100,000 Cutoff 3-90
Table 3-32 Top 100 Procedures in the United States and North Carolina, Ranked by Allowed Charges, 1994 3-96
Table 3-33 Preliminary Demonstration Tests: U.S. and North Carolina 3-100
Table 3-34 Allowed Charges by Lab Location for Specimens Drawn in North Carolina 3-104
Table 3-35 Allowed Charges by Beneficiary Residence for Specimens Drawn in North Carolina 3-105
Table 3-36 Allowed Charges by Medicare Carrier for Specimens Drawn in North Carolina 3-106
Table 3-37 Allowed Charges by Lab Location for Tests Performed on North Carolina Beneficiaries 3-107
Table 3-38 Allowed Charges by State Where Specimens Were Drawn from North Carolina Beneficiaries 3-107
Table 3-39 Allowed Charges by Medicare Carrier for North Carolina Beneficiaries 3-108
Table 3-40 Allowed Charges by Specimen Origin for North Carolina Labs 3-109
Table 3-41 Allowed Charges by Beneficiary Residence for North Carolina Labs 3-109
Table 3-42 Allowed Charges by Medicare Carrier for North Carolina Labs 3-110
Table 3-43 Lab Coverage by County: North Carolina 3-111
Table 3-44 North Carolina Market Shares and Coverage Areas by Lab 3-116
Table 3-45 Number of CLIA-Certified Facilities and Test Volume in North Carolina, by Lab Type...3-118
Table 3-46 Independent Market Shares for North Carolina and Bordering States Based on CLIA Provider File Test Volume 3-120

Table 3-47 Part B Lab Tests Excluding Hospital Outpatient Labs, North Carolina (Unadjusted) 3-121
Table 3-48 Part B Lab Tests Excluding Hospital Outpatient Labs, North Carolina (Adjusted) 3-122
Table 3-49 Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, North Carolina (Unadjusted) 3-122
Table 3-50 Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, North Carolina (Adjusted) 3-123
Table 3-51 Outpatient Hospital Lab Tests in North Carolina 3-124
Table 3-52 North Carolina Part B Allowed Charges and Market Shares by Lab Sector 3-125

Table 4-1 An Example of Size and Scope of Independent Labs 4-8
Table 4-2 Number of Labs Used by Referring Providers in Tennessee 4-14

Table 5-1 Solicitation Announcements Listed in the Commerce Business Daily, March 1 through August 31, 1996 5-9
Table 5-2 Contract Awards Listed in the Commerce Business Daily, March 1 through August 31, 1996 5-14

Figures

Figure 4-1 Collecting and Testing Specimens in a Large Independent Clinical Laboratory 4-3

Preface

This Final Report is a revised version of the Draft Report submitted to HCFA in October 1996 and circulated to members of the Laboratory Technical Advisory Committee (LTAC) prior to the LTAC meeting on October 24, 1996. The Draft Report was prepared by RTI under subcontract to CIGNA HealthCare Medicare, while the Final Report was completed directly under contract to HCFA.

Compared to the Draft Report, the Final Report contains three major revisions. First, and probably most importantly, the Final Report features a more complete discussion of Medicare Part B lab tests performed by hospital labs. We have corrected a programming error that caused us to understate the magnitude of hospital Part B lab tests in Tennessee and North Carolina in Sections 3.1.6 and 3.2.5, respectively. In addition, we have expanded most of the Tennessee analyses in Section 3.1 to integrate carrier data on independent labs and physician office labs with fiscal intermediary data on Part B tests performed by hospitals and other institutions. We have also added tables that analyze the distribution of tests provided by hospital outpatient labs.

Second, one of the key issues in the design of the demonstration is which labs should be required to submit bids. A possible criterion for determining bidding requirements is lab size, as measured by allowed charges. Using Tennessee as a case study, we analyze the effects of required bidding by labs with over $200,000 or over $100,000 in allowed charges in Section 3.1.7.

Third, we have expanded our discussion of Antitrust and Office of Inspector General Actions in Section 2.4 to describe a series of recent settlements between labs and the Department of Justice. The settlements closed a number of federal investigations that were pending at the time the Draft Report was prepared.

Two other developments have occurred since the Draft Report was completed. First, SmithKline Beecham Clinical Labs and HCFA have recently ended their joint agreement whereby most SmithKline claims were processed by a single HCFA carrier. Second, Corning Clinical Laboratories has recently been spun off from its parent company, Corning Incorporated, to form a new entity named Quest Diagnostics. Because the data contained in the Final Report predate these recent developments, we have retained references in the text to the joint agreement between SmithKline and HCFA, and we continue to refer to Corning Clinical Laboratories.

Executive Summary

The purpose of the research report is to provide background information on the clinical laboratory industry that can be used to design the Competitive Bidding for Clinical Laboratory Services Demonstration project.

The Health Care Financing Administration (HCFA) has contracted with CIGNA HealthCare and Research Triangle Institute (RTI) to design and implement a competitive bidding demonstration for clinical lab services. As part of the research phase of the project, RTI—with the assistance of CIGNA—has prepared this research report on the clinical laboratory industry.

The purpose of this report is to provide background information on the clinical laboratory industry that can be used to design the Competitive Bidding for Clinical Laboratory Services Demonstration project. The research will allow HCFA and the project team to understand recent changes in the clinical laboratory industry and the implications of these changes for the demonstration project. This information will be incorporated into the design of the demonstration project. The research findings will also inform HCFA's overall policy toward clinical laboratory services.

ES1. INTRODUCTION: RESEARCH TOPICS AND RESEARCH APPROACH

In Chapter 1 of the report, we present the research topics in Section 1.1 and our research approach in Section 1.2.

ES1.1 Research Topics

Our research focuses on four major topics, which were identified in cooperation with HCFA Project Staff:

- The Structure of the Clinical Laboratory Industry Nationwide
- Case Studies: The Local Market Environment in Tennessee and North Carolina

- Laboratory Operations and Processes
- Recent Experience with Competitive Bidding for Lab Services

Each of these topics forms a chapter in the report. In this Executive Summary, we discuss the key results for each topic area. To allow for easy reference to the report, the Executive Summary is organized following the same outline as the report. Where appropriate, we cite specific tables in the report.

ES1.2 Research Approach

To address the major research topics, our research approach combines four interrelated steps:

- data analysis,
- interviews with Laboratory Technical Advisory Committee (LTAC) members and other experts,
- literature review, and
- synthesis and recommendations.

Each of these steps is briefly described below.

Data Analysis

Because no single data set provides a complete picture of the clinical laboratory industry, we analyzed a series of large HCFA data sets, including

- Carrier Claims Data,
- CLIA Provider File,
- Physician/Supplier Procedure Summary File,
- Clinical Laboratory 100% Standard Analytic File, and
- Outpatient 100% Standard Analytic File.

Taken as a group, the data sets are complementary and can answer most of the research questions; individually, however, the data sources are not always directly comparable because they are collected for different purposes and focus on different issues. In Chapter 1, Section 1.3, we discuss the five principal data sets. We briefly describe each data set and then discuss the strengths and limitations of the data for our analysis. We conclude the section by describing the procedures included in our definition of clinical laboratory services. We also discuss the time period analyzed.

Using these data sources, we computed alternative measures of market concentration and performed locational analyses to trace the flow of lab specimens, tests, and claims between states, labs, and Part B carriers.

Interviews with LTAC Members and Other Experts

To provide technical assistance for the demonstration project, HCFA and CIGNA assembled a Laboratory Technical Advisory Group (LTAC) to assist HCFA in planning and implementing the demonstration project.

To take full advantage of the LTAC's considerable expertise on the clinical laboratory industry, RTI conducted unstructured interviews with nearly every member of the original LTAC who is primarily involved in lab operations. In addition to interviewing LTAC members, we also interviewed a number of other lab experts, including several lab managers in Tennessee, and toured LabCorp's national reference lab in Burlington, North Carolina. The interviews focused on lab operations, costs, actual experience with the bidding and RFP process, and quality, not on the relative merits of competitive bidding for Medicare Part B clinical laboratory services. The interview process is described in greater detail in Section 1.4 of the report.

Literature Review

We supplemented the data analysis and interviews with a review of the literature on the clinical laboratory industry. We reviewed academic and trade journals, financial analyses, company reports, and relevant government documents. LTAC members provided a number of articles and documents for review.

Synthesis and Recommendations

Because we are compiling information from so many disparate sources, we have attempted to carefully synthesize the information and make recommendations about the design of the demonstration project. Synthesis and recommendations are presented throughout each chapter of the report.

ES2. THE STRUCTURE OF THE CLINICAL LABORATORY INDUSTRY NATIONWIDE (CHAPTER 2)

In Chapter 2, we examine the structure of the clinical laboratory market nationwide. Because the market has undergone a number of major changes in recent years, it is important to understand these changes before designing the demonstration project. We discuss the following issues:

- National Market Share Data (Section 2.1)
- Interstate Transport and State Market Shares (Section 2.2)
- Medicare Part B Clinical Lab Trends (Section 2.3)
- Antitrust and Office of Inspector General Actions (Section 2.4)
- Financial Performance and Fee Trends (Section 2.5)
- Lab Industry Technological and Economic Trends (Section 2.6)
- Role of Managed Care (Section 2.7)

Key results in each of these areas are discussed below.

ES2.1 National Market Share Data

Test Volume by Sector

Using data from the CLIA Provider File, we calculated test volume shares for each of the three major types of labs in the clinical laboratory industry:

- hospital labs,
- independent labs, and
- physician office labs (POLs).

There are currently 8,896 CLIA-certified hospital lab facilities in the country, accounting for 52.4 percent of nonwaived volume, 22.3 percent of waived volume, and 50.3 percent of total volume (Table 2-1). The hospital lab data include both inpatient and outpatient test volume. Nonwaived tests account for about 97 percent of hospital test volume.

A total of 5,798 independent lab facilities are currently certified by CLIA. This number greatly overstates the number of independent lab companies because many companies operate multiple lab facilities. Independent labs perform 27.8 percent of all nonwaived tests performed in the country. Low-complexity waived tests account for only about one percent of independent lab volume.

POLs are the most common type of clinical laboratory, but the average POL is relatively small. POLs account for over half of the 157,793 CLIA-certified labs in the country, but they only provide 7.3 percent of the nonwaived test volume (Table 2-1). Over 20 percent of POL tests are waived tests. Besides hospital, independent, and physician-office labs, 53,330 lab facilities in 20 other CLIA categories account for about 12.5 percent of nonwaived test volume. Like POLs, labs in the "Other" category are numerous, have relatively low volume, and perform a disproportionate share of low-complexity waived tests; as a result these labs are often lumped together with POLs when analysts discuss lab categories. Other labs perform nearly half of all waived tests, and waived tests account for about 21 percent of other labs' total volume.

Revenue by Sector

In terms of revenue, the overall size of the industry has been estimated at $30 to $35 billion (Info Trac Investext, 1995; Adelson, 1994; Rice, 1995). Rice (1995) provides a fairly representative estimate of the market share for each segment, estimating that hospitals receive 50 percent, independent labs receive 26 percent, and POLs receive 24 percent of lab revenue (Table 2-3). Another estimate, by Peers & Co., put the 1996 hospital share of revenue at 46 percent, the independent lab share at 39 percent, and the POL share at 15 percent (Gore, 1995). Peers & Co. also estimated changes in revenue and market share over time, both for the industry as a whole and for the major lab sectors (Table 2-4). According to this estimate, the market for clinical laboratory services doubled from $18 billion to $36 billion between 1986 and 1996. Independent labs gained market share, at the expense of hospital labs and, especially, POLs.

The Independent Lab Sector

More is known about market shares within the independent laboratory sector than is known about market shares in the overall market, in part because the largest independent labs release financial information publicly and in part because of recent merger activity involving independent labs. The recent merger activity has greatly changed the structure of the independent lab sector.

In 1989, 8 large clinical laboratory companies accounted for 47 percent of the independent lab sector, with no single company having a greater than 15 percent market share. By 1996, as a result of mergers and acquisitions, a clear Big Three—Laboratory Corporation of America, Corning Clinical Laboratories, and SmithKline Beecham—had emerged to dominate the independent lab sector. Combined, the Big Three accounted for an estimated 57 percent share of the independent lab sector.

ES2.2 Interstate Transport and State Market Shares

Lab specimens are frequently drawn in one state and transported across state lines to be analyzed by labs in other states. Medicare claims are usually filed with the carrier in the state where the lab is located. However, two of the major independent lab companies, SmithKline Beecham and, until recently, Roche Biomedical (now part of LabCorp), send all or most of their claims across state lines to be processed by a central carrier.

The interstate transport of specimens and claims poses complications for both our research and the design of the demonstration project. For research, interstate transport complicates estimation of market shares. The design of the demonstration project must fully reflect and accommodate the transport of specimens across state lines. If the design ignores interstate transport, labs may respond strategically, particularly if competitive bidding produces a lower fee schedule in the demonstration area or the design penalizes losing labs.

The magnitude of out-of-state transport appears to be large. We examined the carrier responsible for lab claims processing in relation to the beneficiary address. The median percentage of Medicare allowed charges processed by in-state carriers was 69 percent; the median percentage of allowed charges processed by out-of-state carriers was 31 percent (Table 2-8). Four carriers processed more than 50 percent of their lab allowed charges for out-of-state beneficiaries (Table 2-9). Thus, out-of-state transport of lab specimens and lab claims is an important factor that should not be ignored in the design of the demonstration project.

ES2.3 Medicare Part B Clinical Lab Trends

In contrast to the late 1980s, when test volume and allowed charges regularly increased by more than 10 percent per year, Part B carrier data suggest that lab volume and allowed charges have been nearly flat during the early 1990s (Table 2-10). Test volume fell slightly between 1992 and 1993, before rebounding nearly to its 1992 level in 1994. Allowed charges actually fell in 1994, after a modest increase in 1993. Because submitted charges continued to rise at a rate of more than 5 percent per year, the ratio of allowed to submitted charges declined to 43 percent in 1994.

Based on Part B carrier data, test volume and allowed charges for independent labs largely mirrored the overall trends for 1992 through 1994 (Table 2-11). Test volume dipped slightly in 1993, before increasing modestly in 1994. Allowed charges increased by about 5 percent in 1993, but fell in 1994 despite the increase in volume. Submitted charges increased by about 10 percent per year. The independent lab sector's share of test volume and allowed charges increased between 1992 and 1994. Independent labs' share of Medicare Part B carrier test volume and allowed charges varied dramatically by carrier (Tables 2-13 and 2-14).

Individual Procedures

To provide a comprehensive understanding of the distribution of allowed charges and volume for individual procedures, we performed a series of analyses of lab data from the 1992, 1993, and 1994 Physician/Supplier Procedure Summary File (Tables 2-15 to 2-20). These data include all carrier-paid Part B testing but not outpatient testing paid through fiscal intermediaries. Nevertheless, the results are considered generally applicable to all Part B testing. Key results from these analyses include:

- Relatively few procedures accounted for most allowed charges. In 1994, the top 25 procedures accounted for 63 percent of allowed charges, and the top 100 procedures accounted for 90 percent of allowed charges
- The rankings for allowed charges for individual procedures don't change much over time
- Rankings by allowed charges and volume are similar

These results have several important implications for the demonstration project:

- By limiting the demonstration to the most common tests, some of the complexity of bidding for the full spectrum of 881 different lab procedures can be reduced. This limitation will have little effect on the potential cost savings from the demonstration because the bulk of lab allowed charges will still be covered.
- The relative stability of the top 100 list implies that the list of procedures to be included in the demonstration and their relative weights can be based on past utilization patterns. The list should certainly be updated when new, potentially popular lab procedures are introduced or HCPCS codes are modified, but even these changes are likely to produce relatively small changes in the distribution of tests across procedures. A possible exception might occur if automated chemistry panels are substantially modified.
- For the purpose of defining demonstration tests, we believe that "common" tests should be defined on the basis of allowed charges, rather than volume. This belief is based in part on the knowledge that the rankings by allowed charges and volume are quite similar. More decisively, basing the definition on allowed charges identifies procedures where the potential savings from competitive bidding are largest.
- In contrast, we believe that weights for the purpose of calculating a single composite bid for a lab should be based on volume. The composite bid allows an evaluator to compare each bidder's cost for performing the entire bundle of demonstration tests.

Demonstration Tests

Based on a review of 1994 national and Tennessee data, CIGNA and RTI selected a list of 105 procedures to be included in the lab demonstration project (Table 2-21). This list will be reviewed by the LTAC. Nationwide, these demonstration tests accounted for 83 percent of lab allowed charges and 88 percent of total lab volume. Demonstration tests accounted for at least 70 percent of allowed charges in every carrier jurisdiction and topped 80 percent in all but six jurisdictions.

Taken as a group, the list of demonstration procedures accounted for the vast majority of lab allowed charges and volume in every carrier jurisdiction, with relatively little variation in the shares across states. Consequently, the same set of demonstration tests could be used, perhaps with slight state-by-state modification, no matter where the demonstration is located.

ES2.4 Antitrust and Office of Inspector General Actions

Antitrust

Neither the Department of Justice (DOJ) nor the Federal Trade Commission (FTC) has commented publicly on recent lab mergers. The antitrust agencies review confidential information when companies merge; typically, their findings are only released if the agency decides to challenge the merger. Indirectly, the absence of public releases may indicate that the agencies have not been overly concerned with growing concentration in the industry.

The DOJ has recently approved formation of a network of small to mid-sized independent laboratories and the FTC has recently approved formation of a lab networks involving hospital labs. In both cases, the antitrust agencies viewed these developments as procompetitive, rather than anticompetitive, because they allowed participating labs to better compete for contracts with managed care networks. A partial understanding of the antitrust agencies' views on the industry can be inferred from their decisions in these cases.

OIG

The Office of the Inspector General (OIG) has expressed a number of concerns about laboratory billing practices in the past, particularly dual pricing, the practice by which Medicare fees were significantly higher than the fees independent physicians were charged. In a 1996 report, OIG concluded that the Medicare fee schedule is still above the prices physicians pay, although the price differential has decreased.

In recent years, OIG has issued a number of subpoenas to investigate laboratory billing practices. These investigations have culminated in a series of million-dollar settlements between laboratories and federal agencies.

ES2.5 Financial Performance and Fee Trends

Recent Financial Performance

The clinical laboratory business has undergone a number of changes in the past 5 years. The $30 billion a year industry has undergone changes in regulations and reimbursement trends, and has been under continued pressure from HMOs and Medicare to lower prices (Schroder Wertheim & Co, 1996).

Partly as a result of these trends, clinical laboratories are currently struggling financially. For example, among the five largest independent labs:

- LabCorp reported net losses of $12.3 million in 1995, and $14.2 million in the second quarter of 1996.
- Corning is spinning off its clinical laboratory division in order to improve its financial condition.
- SmithKline Beecham's clinical lab division reported declining sales and operating margins.
- Unilab reported a net loss of $39 million in 1995.
- Physicians Clinical Laboratory reported a net loss of $79.2 million (some but not all in extraordinary items) in its most recent fiscal year and has a current negative shareholder equity position of $64.6 million.

Fees

Nearly all of the companies' annual reports cite declining reimbursement levels and changes in payer mix as major factors in their recent financial woes. Both Medicare and managed care prices have been falling significantly, according to these reports, and revenues have fallen further as patients move from the fee-for-service sector into managed care.

A recent financial analysis of LabCorp by Rice (1995) shows the potential effects of managed care on lab fees by comparing fees across payments sources (Table 2-23). Despite the lower fees from managed care, labs see managed care as the inevitable wave of the future and have aggressively sought managed care contracts.

ES2.6 Lab Industry Technological and Economic Trends

Lab Cost Components

Specific components of costs appear to vary widely between lab sectors. Differences in the relative shares of key cost components complicate cost comparisons between labs in different sectors. In addition, LTAC members stress that focusing on a single cost component, such as analytic cost, may be misleading and may obscure overall trends in total laboratory costs.

Lab Cost

LTAC members are not aware of systematic published data on lab costs. Labs have proprietary information on costs, and many use costing software and/or subscribe to benchmarking systems. But LTAC members cautioned against direct comparisons of these data because of differences between

- lab sectors,
- labs within sectors, and
- benchmarking systems.

The lack of systematic, publicly available information on lab costs certainly complicates administrative efforts to adjust the current fee schedule.

Perceived Cost Trends

Several LTAC members indicated that testing costs have fallen over time ("They've had to, or I would be out of business," said one). Much of the cost reduction has occurred by reducing labor costs, through automating and/or substituting less-educated personnel.

There was not universal consensus that costs have been falling, however. Several members suggested that costs have risen overall, despite automation.

Profits

In contrast to their mixed feelings on costs, LTAC members were fairly universal in stating that profit margins have declined in recent years.

Overpriced and Underpriced Procedures

We asked many of the LTAC members to identify tests where Medicare pays significantly more or significantly less than cost. Members were generally unable or reluctant to identify overpriced tests, although a few such tests were cited. Members were much more likely to identify tests as underpriced.

The indicated presence of both underpriced and overpriced procedures suggest that the relative prices included in the current Medicare fee schedule do not accurately reflect the relative costs of individual procedures. Consequently, competitive bidding might be used to set new relative fees for individual procedures that better reflect relative costs.

ES2.7 Role of Managed Care

Both our literature review and our interviews with LTAC members and other experts confirm that managed care is having a major impact on the clinical laboratory industry. One of the most noticeable effects has been on reimbursement. Not only are MCOs paying less than other payers, but they are frequently contracting with labs on a capitated, rather than a fee-for-service, basis. In the past, under fee-for-service, lab marketing focused on increasing test utilization. With capitated contracts, in contrast, labs have greater incentive to rationalize use of tests. Despite the lower reimbursement and capitated contracts offered by MCOs, labs have aggressively sought managed care contracts, frequently through competitively bid solicitations.

Bidding on MCO Contracts

Smaller labs suggest that large labs have bid below costs on large MCO contracts in hopes of receiving profitable "pull-through" business from MCO physicians who also treat Medicare and non-MCO patients. On a related note, several members questioned whether labs could offer the same prices to Medicare that they offer to MCOs. Indeed, members suggested that the prices received by MCOs would eventually have to rise if Medicare adopted competitive bidding.

Pull-Through

Many observers believe that the pull-through has not materialized. In part, this is because physicians have less control over where they send tests than they previously had (most physicians belong to more than one MCO, and each may have its own preferred provider). In addition, as physicians become more accustomed to sending tests to more than one lab, pull-through becomes less likely.

Statewide Bidding

Smaller labs are very concerned about bidding competitions that require labs to provide statewide or even nationwide coverage. According to one independent lab manager, smaller labs are being "devastated" because MCO RFPs are generally written so that small labs cannot bid, due to requirements for statewide coverage. Small labs suggested that required geographic coverage areas should be much smaller than a state. This suggestion has important implications for the demonstration project.

Networks

In response to MCO requirements for statewide coverage, small independent and hospital labs are beginning to form lab networks. The purpose of the network is to provide a broader geographic coverage area and, in some cases, to reallocate test volume among labs to exploit economies of scale and achieve specialization that could not be accomplished within the individual labs. Many of the hospital lab representatives we interviewed are forming or are considering forming lab networks.

ES3. CASE STUDIES: THE LOCAL MARKET ENVIRONMENT IN TENNESSEE AND NORTH CAROLINA (CHAPTER 3)

Besides the major changes in the clinical laboratory industry nationwide, there may be other factors affecting the clinical laboratory industry in more localized markets. Because the demonstration project will be limited to a state or regional area, we performed in-depth case studies on the laboratory market in two states. Tennessee and North Carolina were selected for this analysis because CIGNA, in its role as Part B carrier for these states, has special access to Medicare lab data and a working knowledge of the market structure there. In addition, the two states initially appeared to be natural sites for the demonstration, due to CIGNA's participation in the project.

Focusing on state markets also allowed us to perform detailed analyses of individual lab claims that were not feasible at the national level. The data set for most of the analyses in this chapter is the 1994 Clinical Laboratory 100% Standard Analytic File (Lab SAF). Using this data set, we were able to perform analyses based on the location where the test specimen was drawn or where the beneficiary lived, thereby overcoming some of the limitations of analyses based on lab location or carrier claims processing that we discussed in Chapter 2.

In Chapter 3 of the report, the Tennessee study is presented in Section 3.1 and the North Carolina case study is presented in Section 3.2. The key results of this analysis are described below.

ES3.1 Tennessee

High-Volume Test List

Using data on carrier-paid Part B testing, we show that the top procedures in Tennessee are quite similar to the top procedures nationwide (Table 3-1). Tennessee's distribution of demonstration tests is also similar to the national distribution (Table 3-2).

Locational Analyses

A key issue for the demonstration design is how to operationally define which tests are included in the demonstration area. For example, if Tennessee is selected to be the demonstration area, tests could be defined to be "Tennessee" tests in at least four ways:

- if the specimen is drawn in Tennessee,
- if the Medicare beneficiary lives in Tennessee,
- if the lab performing the test is located in Tennessee, or
- if the Tennessee Part B carrier processes the claim.

To determine whether the different definitions make a difference in practice (i.e., the set of claims qualifying under the first definition significantly differs from the set of claims meeting the second criteria, and so on), we performed detailed locational analyses of separate data extracts from the Lab SAF for Tennessee and North Carolina. Claims were included in the Tennessee extract if

- the lab performing the test was located in Tennessee,
- the beneficiary lived in Tennessee, or
- the referring physician who drew the specimen practiced in Tennessee.

In fact, the definitions do matter. Based on all procedures, most (about 87 percent) specimens drawn in Tennessee were processed in labs located in Tennessee (Table 3-3). Only about 70 percent of the claims for lab tests originating from Tennessee were actually processed by CIGNA, as the Medicare Part B carrier for Tennessee (Table 3-5). About 87 percent of Tennessee beneficiaries' lab tests were performed in Tennessee (Table 3-6). There were substantial flows of lab specimens in to Tennessee: about 24 percent of the allowed charges paid to Tennessee labs originated from specimens drawn outside the state (Table 3-9).

Based on the locational analyses, we recommend defining Tennessee tests using the location where the specimen is drawn.

We also examined how many and what type of labs are currently providing coverage for each of the 95 counties in Tennessee (Table 3-12). The number of labs serving and sector shares varied widely among counties. Not surprisingly, the numbers of independent labs, POLs, and hospital labs serving each county were closely related to allowed charges. Rural counties generally had low allowed charges, and consequently were served by fewer labs than urban counties. The relationship between allowed charges and lab sector share is less clear.

Market Shares

We calculated market shares for lab companies testing Tennessee specimens from combined Lab and Outpatient SAF data (Table 3-13). On this basis, the 4 largest, and 5 of the top 10, labs in the state were independent labs. The Big Three lab companies (LabCorp, SmithKline Beecham, and Corning) had the leading market shares in the state. Hospital labs accounted for 5 of the top 10 labs in the state and the largest number of labs with over $100,000 in allowed charges. Relatively few POLs had over $100,000 in allowed charges.

County service area roughly paralleled lab allowed charges. The two largest labs provided nearly statewide coverage. The next two labs served about two-thirds of the counties in the state. After that, only three other labs served more than half of the counties in the state.

These results have important implications for the design of the demonstration project.

- ➤ The leading market shares of several large independent labs justify focusing on these labs when setting up the demonstration.
- ➤ The high market share of hospitals, individually and collectively, suggests that hospital labs should be seriously considered for inclusion in the demonstration.

- Although relatively few POLs had over $100,000 in allowed charges, it may still make sense to require some of these labs to bid in the demonstration.
- The county coverage in 1994 suggests that the demonstration project should be designed so that bidding labs do not have to commit to providing statewide coverage. Most labs would have had difficulty providing statewide coverage.

Market shares calculated from the Lab and Outpatient SAFs are especially useful because they account for specimen origin. However, these market shares are only based on Medicare claims. Market shares based on Medicare and non-Medicare volume can be calculated from the CLIA Provider File. But there is a tradeoff: the CLIA Provider File contains no information on patient origins. Thus, market shares calculated from the file are based on lab location.

We used the 1996 CLIA Provider File to calculate independent lab combined and Medicare and non-Medicare market shares for Tennessee and bordering states (Table 3-15). This calculation shows that the independent lab sector can be quite concentrated in some states. The shares of independent lab tests for the dominant labs in Alabama, Georgia, Kentucky, North Carolina, and Virginia all exceeded 65 percent. By comparison, markets in Arkansas, Missouri, Mississippi, and Tennessee, appeared more competitive.

The Big Three lab companies had a notable presence in the market shares for each state. At least one of the Big Three companies had the highest or second highest market share in each state. However, regional lab companies had sizable market shares in Alabama, Arkansas, Mississippi, Tennessee, and Virginia. Finally, it should be noted that the markets appeared much less concentrated when the entire lab market, rather than the independent lab sector alone, was considered.

The Memphis Market

In Memphis, unlike the state as a whole, the independent labs with the leading market share are affiliated with large hospital and health care systems (Table 3-16). Based on our discussions with LTAC members, the close affiliation between the Memphis independent labs and hospital systems is not uncommon.

Medicare Part B Clinical Lab Test Trends

Because of the volume of the claims data, we only analyzed the Tennessee Lab SAF data for 1994. Therefore, we use the Physician/Supplier Summary Files to analyze trends in the state for 1992 through 1994 (Tables 3-17 to 3-20). The trends in Tennessee largely mirrored national trends.

Part B Clinical Lab Tests in Tennessee Hospitals

Although lab tests performed by hospital outpatient labs are reimbursed under the Medicare Part B program, claims for the tests are actually processed by Medicare Part A fiscal intermediaries. Consequently, data on outpatient lab tests are not contained in the same data sets as data on tests performed by independent labs and POLs. Because the magnitude of outpatient testing has important implications for the demonstration project, we conducted in-depth analyses of outpatient lab claims data for Tennessee.

About 2.6 million Medicare Part B lab procedures were performed in outpatient labs in Tennessee in 1994 (Table 3-21). Just under half of these were nonpatient tests, where a lab specimen was referred to the hospital lab for a patient who never visited the hospital. Nonpatient lab procedures also accounted for just under half of the $25.8 million in allowed charges paid to outpatient labs in 1994.

Hospital outpatient labs accounted for 37.6 percent of all Part B testing in Tennessee, with 16.5 percent coming from nonpatient testing and 21.1 percent coming from patient testing. Independent labs and POLs split the remaining 62.4 percent of the market, with independent labs having a slightly larger market share.

The share of nonpatient tests varied widely between hospitals, ranging from 6 percent to 70 percent for the 37 hospitals with more than $200,000 in allowed charges. The proposed list of demonstration tests accounted for the majority of hospital allowed charges for both nonpatients and patients.

Test Coverage by Lab Size and Type

One of the key issues in the design of the demonstration is which labs should be required to submit bids. A possible criterion for determining bidding requirements is lab size, as measured by total allowed charges. Using Tennessee as a case study, we analyzed the effects of requiring bidding by labs with over $200,000 or over $100,000 in allowed charges.

With a $200,000 cutoff for all charges, required bidders accounted for about 57 percent of total and demonstration test allowed charges. Shifting the cutoff from $200,000 to $100,000 increases coverage of demonstration allowed charges by only about 12 percent, although the number of required bidders nearly doubles under the latter scenario. Coverage of individual demonstration tests is nearly as extensive under the $200,000 cutoff as the $100,000 cutoff.

Although the four largest labs performed more than 90 of the 102 demonstration tests available in 1994, no single lab performed all of the demonstration tests. Of the 52 labs with more than $200,000 in allowed charges, 28 performed 75 or more demonstration tests, and 23 performed between 60 and 75 demonstration tests; only one performed less than 60 demonstration tests. Only 7 of the labs between $100,000 and $200,000 in allowed charges performed 75 or more demonstration tests, 27 performed less than 60 demonstration tests, and one lab did not perform any demonstration tests. However, labs may be capable of performing additional demonstration tests, although the tests are not currently billed to Medicare.

Geographic coverage under each cutoff was reasonably good as measured by the number of labs attaining the cutoff. All of the counties were served by at least one laboratory that attained the $200,000 cutoff. On average, each county was served by 3.4 independent labs, 0.5 POLs, and 6.8 hospital labs that met the $200,000 cutoff. Although the number of labs serving each county that met the cutoff was reasonably high, there was a fairly high variation in the county market share for these labs.

ES3.2 North Carolina

We repeated most of the analyses for North Carolina (Section 3.2). The biggest difference between North Carolina and Tennessee was that the North Carolina independent lab sector was dominated by a single lab.

ES4. LAB OPERATIONS AND PROCESSES (CHAPTER 4)

One of the objectives of our research was to develop a comprehensive understanding of laboratory operations that could be used to better design the clinical laboratory demonstration project. In this chapter, we discuss lab operations in general and address specific questions the relationships between labs, physicians, and service areas. Many of our findings are based on our interviews with LTAC members and other experts in the industry.

We examine the following issues:

- Laboratory Operations (Section 4.1)
- Services to Rural Areas (Section 4.2)
- Physician Choice of Lab (Section 4.3)
- Physician's Medicare Business (Section 4.4)
- Where Are Specimens Drawn? (Section 4.5)
- Long-Distance Transport of Tests (Section 4.6)
- Shared Labs (Section 4.7)

The most important results are summarized below.

ES4.1 Laboratory Operations

In interviews with LTAC members and other experts, much of the time was devoted to developing a full understanding of lab operations. Respondents were asked to discuss how their lab

- attracts clients,
- collects and transports specimens,
- performs tests,
- reports test results,
- collects reimbursement, and
- conducts quality control and quality assurance checks.

From these discussions, we developed descriptions of lab operations in the three major lab segments: independent labs, hospital labs, and POLs. We compare and contrast operations in the three sectors, noting how lab processes and organization are affected by test volume, complexity, and clientele. The different sectors also have different concerns about regulatory and reimbursement issues, and we briefly discuss these views.

ES4.2 Services to Rural Areas

Some, but not all, LTAC members and other experts we interviewed suggested that large independent labs are growing more reluctant to serve rural areas. We used the Tennessee extract of the 1994 Lab SAF to analyze lab service to rural counties in Tennessee. To briefly summarize this analysis, we found the following:

- The number of labs serving and independent lab shares varied widely between counties.
- Rural counties generally had low allowed charges, and consequently were served by fewer numbers of both independent labs and POLs than urban counties.
- The relationship between allowed charges and independent lab share is less clear.

ES4.3 Physician Choice of Lab

According to many LTAC members, physicians choose labs on the basis of price and service, with the primary motivation varying between physicians. Managed care organizations (MCOs) that strongly encourage or require participating physicians to use a designated lab are increasingly influencing a physician's choice of lab, according to respondents.

ES4.4 Physician's Medicare Business

To examine whether physicians routinely send Medicare lab tests to more than one provider, we analyzed the Tennessee extract of the 1994 Lab SAF. Using Part B carrier data, we calculated the number of labs used by each referring provider in Tennessee (Table 4-2). Nearly three-fourths of Tennessee providers used only one lab in 1994. However, physicians using only one lab accounted for only about 25 percent of allowed charges in the state. Providers who referred larger numbers of tests were more likely to use multiple labs.

Our analysis was based on a single year's data and therefore cannot provide trend information on the number of labs a typical physician uses, so we asked LTAC members about such trends. LTAC members agreed that physicians are increasingly using more than one lab.

Because of the growing use of multiple labs, one of the main concerns raised about past proposals for the lab demonstration—

physicians' reluctance to use more than one lab—may be less relevant now.

ES4.5 Where Are Specimens Drawn?

Although the use of lab-operated drawing stations has increased in recent years, the vast majority of specimens tested by independent labs are still drawn within physician offices. One indication of the dominance of physician office drawing sites is the relative distribution of HCPCS code G0001—drawing blood for specimen—procedures among independent labs, hospital labs, and physicians. In Tennessee in 1994, physicians accounted for 57.9 percent of allowed charges for G0001, compared to 29.2 percent for hospitals and 12.8 percent for independent labs.

ES4.6 Long-Distance Transport of Tests

LTAC members indicated that long-distance transport of certain lab tests does require careful quality assurance procedures. For example, specimens for a few tests must be frozen and others must be stabilized and refrigerated within 8 hours. For most lab tests, however, long-distance transport is possible, as long as correct procedures are followed. Labs must have written policies on transport; reputable labs follow these policies carefully.

ES5. RECENT EXPERIENCE WITH COMPETITIVE BIDDING FOR LAB SERVICES (CHAPTER 5)

Competitive bidding has become increasingly common in the clinical laboratory industry in recent years. Both private organizations and government agencies are using forms of competitive bidding to select lab providers and set lab fees. In Chapter 5, we examine recent experience with competitive bidding for lab services. We address the following issues:

- Managed Care Organizations (Section 5.1)
- Government Organizations (Section 5.2)
- RFPs (Section 5.3)
- Quality (Section 5.4)

ES5.1 Managed Care Organizations

MCOs are increasingly contracting with individual laboratory companies for laboratory services. In some cases, MCOs negotiate directly with a single lab provider. In other cases, the MCOs set up a more formal bidding competition by issuing RFPs and invitations to bid to selected providers.

To provide a better understanding of the flavor of MCO contracting with labs, we present detailed descriptions of the experiences of two organizations that have used competitive bidding to select and reimburse labs. The two organizations are the Tennessee Managed Care Network, which used competitive bidding in 1993 to negotiate lab contracts for its new TennCare plan, and CIGNA HealthCare, which in 1995 conducted a bidding competition to select a single laboratory to provide reference laboratory services for its numerous health plans nationwide.

Several general conclusions arise from these and other examples of competitive bidding for lab services:

- Buyers believe they received good prices through competitive bidding. They are generally reluctant to reveal what those prices are.
- Buyers also believe they received good quality and good service.
- Buyers generally seek single-source contracts. An exception is Aetna, which uses nonexclusive contracts with each of the Big Three lab companies (*Laboratory Industry Report,* 1995).
- Managed care organizations usually seek capitated contracts when they are single source, while VA and other hospitals use competitive bidding to set prices for individual tests on a fee-for-service basis.
- Buyers believe they have achieved substantial savings even with only three or four labs bidding for their contracts. Both CIGNA and the Tennessee Managed Care Network were pleased with the prices they received from competitive bidding between three or four large labs.

ES5.2 Government Organizations

Solicitations for government contracts and government contract awards are usually announced in the *Commerce Business Daily (CBD).* To determine whether other government agencies use competitive bidding for lab services, we examined electronic versions of the *CBD* for the period between March 1 and August 31, 1996.

Competitive procurement of laboratory services by government agencies is not unprecedented. We found 27 solicitation announcements for the 6-month period (Table 5-1). The procurements were sponsored by a wide variety of government agencies. Although none of the procurements was exactly comparable to that contemplated under the Medicare demonstration, this past experience may offer useful lessons for the demonstration project.

The procurements varied widely in

- test complexity,
- volume,
- pickup requirements, and
- turnaround time.

We also found 10 contract awards for lab services (Table 5-2). Although the contract award notices provide little detail about the scope of contractual work, they do offer some important insights about lab solicitations:

- Contract awards vary widely, ranging from one contract for $7,784 to three contracts worth more than $1 million, topped by a $12.9 million contract for drug screen testing.
- Winners run the gamut of the independent and hospital lab spectrum, including large national lab companies, specialized labs, regional labs, and clinic and hospital-affiliated labs.

ES5.3 RFPs

We discuss various aspects of the request-for-proposal (RFP) process. Buyers are becoming increasingly sophisticated in the requirements presented in RFPs. According to one LTAC member, RFPs have matured in complexity and quality in recent years.

One of the LTAC members has written an article on how to write an effective RFP, and the article's insights should provide assistance in the development of an RFP for the bidding demonstration. The article's theme is that the contracting organization should carefully consider its needs and priorities and clearly state its contract specifications in the RFP.

We also review several RFPs that were provided by an LTAC member or obtained from government agencies. Although the bidding design of the Medicare demonstration project may differ substantially from the design of these procurements, several sections of the RFPs may be incorporated into the Medicare RFP. In particular, the government RFPs may provide useful templates for the development of RFP sections on statement of work, licensing and accreditation, service, and quality control requirements.

ES5.4 Quality

One of the key issues in designing the demonstration project is how to ensure that the demonstration does not adversely affect quality. We asked a number of LTAC members and experts questions about monitoring quality.

Members generally agreed that CLIA 88 alone does not guarantee lab quality. Some members also expressed concern that the RFP process alone cannot fully ensure quality. Members felt that additional monitoring is necessary to maintain contract performance. At the same time, they also pointed out that labs have strong incentives to provide quality to maintain long-term relationships with purchasers.

Several members suggested that split-sampling could be used to enhance quality control and monitor performance by labs winning bidding competitions. Other methods for assuring quality during the demonstration cited include

- feedback from physicians and nurse practitioners, and
- a built-in system for monitoring and responding to physician complaints.

1

Introduction

Chapter Outline

- 1.1 Research Topics
- 1.2 Research Approach
- 1.3 Lab Data Sources
- 1.4 LTAC and Other Expert Interviews

The Health Care Financing Administration (HCFA) has contracted with CIGNA HealthCare and Research Triangle Institute (RTI) to design and implement a competitive bidding demonstration for clinical lab services. As part of the research phase of the project, RTI—with the assistance of CIGNA—has prepared this research report on the clinical laboratory industry.

The purpose of the research report is to provide background information on the clinical laboratory industry that can be used to design the Competitive Bidding for Clinical Laboratory Services Demonstration project.

The purpose of this report is to provide background information on the clinical laboratory industry that can be used to design the Competitive Bidding for Clinical Laboratory Services Demonstration project. The research will allow HCFA and the project team to understand recent changes in the clinical laboratory industry and the implications of these changes for the demonstration project. This information will be incorporated into the design of the demonstration project. The research findings will also inform HCFA's overall policy toward clinical laboratory services.

1.1 RESEARCH TOPICS

Our research focuses on four major topics, which were identified in cooperation with HCFA Project Staff:

- The Structure of the Clinical Laboratory Industry Nationwide
- Case Studies: The Local Market Environment in Tennessee and North Carolina
- Lab Operations and Processes
- Recent Experience with Competitive Bidding for Lab Services

Each of these topics forms a chapter in this report; we discuss each chapter briefly below.

The Structure of the Clinical Laboratory Industry Nationwide (Chapter 2)

This chapter describes the current market structure of the clinical laboratory industry nationwide and discusses how the market structure has been affected by recent changes in the industry. We examine

- national market shares,
- interstate transport of lab tests and state market shares,
- Medicare Part B trends,
- antitrust and Office of Inspector General actions,
- fee and financial performance trends,
- technological and economic trends,
- managed care, and
- hospital outpatient lab services.

Case Studies: The Local Market Environment in Tennessee and North Carolina (Chapter 3)

Our analysis of the market structure nationwide may obscure important factors affecting the clinical laboratory industry in more localized markets. Because the demonstration project will be limited to a state or regional area, we decided to perform in-depth case studies on the laboratory market environment in two states. Tennessee and North Carolina were selected for this analysis because CIGNA, in its role as Part B carrier for these states, has special access to Medicare lab data and a working knowledge of the market structure there. In addition, the two states initially appeared to be natural sites for the demonstration, due to CIGNA's participation in the project.

As part of the case studies, we examine

- high-volume tests,
- alternative definitions of state tests,
- market shares,
- Medicare Part B trends,
- the Memphis market,

- hospital outpatient lab services, and
- test coverage by lab size and type.

Lab Operations and Processes (Chapter 4)

In this chapter, we describe how clinical labs operate in general and address specific questions about the relationships between labs, physicians, and service areas. We examine

- lab operations,
- service to rural areas,
- physician choice of lab,
- physicians' Medicare business,
- where specimens are drawn,
- long-distance transport of tests, and
- shared labs.

Recent Experience with Competitive Bidding for Lab Services (Chapter 5)

In this chapter, we discuss the experience of other purchasers who use competitive bidding to select providers and set fees for laboratory services. We examine

- managed care organizations,
- government organizations,
- RFPs, and
- quality.

1.2 RESEARCH APPROACH

To address the major research topics, our research approach combined four interrelated steps:

- data analysis,
- interviews with Laboratory Technical Advisory Committee (LTAC) members and other experts,
- literature review, and
- synthesis and recommendations.

Each of these steps is described briefly below.

Data Analysis

Because no single data set provides a complete picture of the clinical laboratory industry, we analyzed a series of large HCFA data sets, including

- CLIA Provider File,
- Physician/Supplier Procedure Summary File,
- Carrier Claims Data,
- Clinical Laboratory 100% Standard Analytic File, and
- Outpatient 100% Standard Analytic File.

The data sets are described in greater detail in Section 1.3 of this chapter. Using these data sources, we computed alternative measures of market concentration and performed locational analyses to trace the flow of lab specimens, tests, and claims between states, labs, and Part B carriers.

Interviews with LTAC Members and Other Experts

To take full advantage of the LTAC's considerable expertise on the clinical laboratory industry, RTI conducted unstructured interviews with nearly every member of the original LTAC who is primarily involved in lab operations. In addition to interviewing LTAC members, we also interviewed a number of other lab experts, including several lab managers in Tennessee, and toured LabCorp's national reference lab in Burlington, North Carolina. The interviews focused on lab operations, costs, actual experience with the bidding and RFP process, and quality, not on the relative merits of competitive bidding for Medicare Part B clinical laboratory services. The interview process is described in greater detail in Section 1.4 of this chapter.

Literature Review

We supplemented the data analysis and interviews with a review of selected literature on the clinical laboratory industry. We reviewed trade journals, financial analyses, company reports, and relevant government documents. LTAC members provided a number of articles and documents for review.

Synthesis and Recommendations

Because we are compiling information from so many disparate sources, we have attempted to carefully synthesize the information and make recommendations about the design of the demonstration project. Synthesis and recommendations are presented throughout each chapter of the report.

In the remainder of this chapter, we present introductory information on our data analysis and interviews with LTAC members and other experts on the clinical laboratory industry.

1.3 LAB DATA SOURCES

There is no single data source on clinical laboratory tests that can answer all of the research questions relevant to the lab demonstration. Consequently, in this report we analyze a number of different data sets, including

- CLIA Provider File,
- Physician/Supplier Procedure Summary File,
- Carrier Claims Data,
- Clinical Laboratory 100% Standard Analytic File, and
- Outpatient 100% Standard Analytic File

Taken as a group, the data sets are complementary and can answer most of the research questions; individually, however, the data sources are not always directly comparable because they are collected for different purposes and focus on different issues.

In this section, we discuss the five principal data sets we analyzed. We briefly describe each data set and then discuss the strengths and limitations of the data for our analysis. We conclude the section by describing the procedures included in our definition of clinical laboratory services. We also discuss the time period analyzed.

CLIA Provider File

- Strengths
  - ✓ current information on all active labs
  - ✓ Medicare and non-Medicare volume
- Limitations
  - ✓ volume based on tests, not on HCPCS procedures
  - ✓ volume not updated frequently
  - ✓ difficult to link affiliated labs
  - ✓ no data on revenue or patient origins
  - ✓ does not distinguish between inpatient and outpatient hospital tests

CLIA Provider File

Clinical laboratories are currently regulated under the Clinical Laboratory Improvement Amendments of 1988 (CLIA 88). As part of the regulatory process, labs submit CLIA applications to HCFA and undergo periodic surveys by government or private accreditors. Information obtained from the application and surveys by government accreditors form the backbone of the CLIA Provider File.

Consequently, the CLIA Provider File is an excellent source of data for identifying the names, locations, and specialties of clinical laboratories that are currently active. As part of the application process, labs also report their total—Medicare and non-Medicare—annual test volume. Because the other data sets described below are limited to Medicare claims, the CLIA Provider File is potentially the best source of information on overall market share for individual labs.

For a number of reasons, however, the volume figures from the CLIA Provider File must be interpreted with some care when calculating market shares:

- CLIA test volume is based on the number of tests performed, not on the number of HCFA Common Procedure Coding System (HCPCS) procedures performed. On the CLIA application, each profile, panel, or group of tests usually performed simultaneously is counted as the total number of separate tests or procedures of which it is comprised. For example, one HCPCS 80019 (19 clinical chemistry tests) procedure is counted as 19 tests by CLIA.
- Although the total annual test volumes are self-reported, they are probably reasonably accurate when they are submitted on the application form because the volumes are used to set regulatory fees. Between applications, however, the data are only updated when the lab is surveyed by government accreditors, and most labs are surveyed by private accreditors. Thus, as the interval since the last application increases, the application annual test volume becomes a less precise estimate of the lab's current annual test volume.
- Some large independent companies operate hundreds of CLIA-certified labs. On the public use file, there is no systematic way to identify labs with a common owner, although it is possible to link labs manually within states.
- The file does not contain information on lab revenues, Medicare volume, or patient origin. Consequently, it is not possible to compute market shares based on these variables.
- The file does not distinguish between inpatient and outpatient test volume for hospital labs. Only outpatient tests are relevant for the demonstration project, which will be limited to Medicare part B services.

Some of the other variables of interest that are listed in the documentation for the CLIA Provider File have not yet been reported within the File in a consistent, validated manner. These variables include change of ownership and shared lab status.

Physician/Supplier Procedure Summary File

The Physician/Supplier Procedure Summary File contains summary information on test volume and submitted and allowed charges for all Medicare Part B claims processed by Medicare Part B Carriers.

Physician/Supplier Procedure Summary File

- Strengths
  - ✓ nationwide trend data
  - ✓ relatively compact
- Limitations
  - ✓ no hospital outpatient data
  - ✓ no data on individual labs
  - ✓ difficult to perform state analyses

Claim information is aggregated into observations with unique combinations of carrier, procedure code, first and second modifiers, types of service, place of service, specialty, and locality.

The Physician/Supplier Procedure Summary File provides excellent information on nationwide Medicare lab trends in volume, submitted charges, allowed charges, distribution of tests by procedure, and independent lab market share. Moreover, as a result of the aggregation, the data set is much more compact than individual claims data. The entire (lab and nonlab procedures) Physician/Supplier Procedure Summary File fits on four data cartridges; in contrast, an extract of the Laboratory Standard Analytic File (see below) consisting only of Tennessee lab claims fills five data cartridges. As a result, the Physician/Supplier Procedure Summary File is much easier to use than unaggregated claims data.

Nonetheless, the Physician/Supplier Procedure Summary File has the following limitations that must be considered when analyzing and interpreting its data:

- Outpatient hospital lab claims, which are paid by Part B but processed by Part A fiscal intermediaries, are not included on the Physician/Supplier Procedure Summary File.
- Information on individual labs is not available. Therefore, although it is possible to use the Physician/Supplier Procedure Summary File to calculate the market share of the independent lab sector relative to the POL sector, it is not possible to calculate market shares for individual labs.
- Observations in the Physician/Supplier Procedure Summary File are aggregated on the basis of the carrier that processes a claim, not on the basis of beneficiary location or the location where a specimen is drawn. This limitation is important for the demonstration because lab specimens are often transported across state lines to regional labs; the resulting claims are usually processed by the carrier in the second state. In addition, claims for all tests performed by Roche Biomedical Labs (now part of Laboratory Corporation of America) were—until April 1996—processed through the North Carolina Part B carrier, while claims for many, but not all, SmithKline Beecham labs are processed through the Delaware Part B carrier. Economically, it is more

appropriate to set reimbursement based on the location where a lab specimen originates, rather than on the location where the test is performed or the claim is processed.

Carrier Claims Data

Carrier Claims Data

- Strengths
  - ✓ carriers can readily access and analyze
  - ✓ permits analyses at lab and patient-level
- Limitations
  - ✓ excludes outpatient labs
  - ✓ incomplete due to interstate transport of specimens and claims

Medicare Part B carriers have ready access to the individual claims they process and the expertise to quickly analyze these data. Because individual claims are available, the carrier can perform analyses at the individual lab level. Analyses based on beneficiary location or on the location where a specimen was drawn are also possible—for those claims processed by carrier.

On the other hand, analyses of a single carrier's claims are limited by the following factors:

- Hospital outpatient lab claims are excluded.
- Interstate transport of lab specimens cannot always be traced. Although locational analysis of State A's lab claims can identify specimens that originated in State A and had tests performed and claims processed in State A, as well as specimens that originated in State B and had tests performed and claims processed in State A, the analysis cannot identify specimens that were drawn in State A and had tests performed and/or claims processed in State B. Therefore, locational analysis of a single carrier's claims will be incomplete in states where many specimens or claims were transported out of state.

Clinical Laboratory 100% Standard Analytic File

Lab SAF

- Strengths
  - ✓ identifies lab, beneficiary, residence, and referring provider
  - ✓ supports complete locational analyses
- Limitations
  - ✓ size (>200 million claims)
  - ✓ no outpatient lab data

The Clinical Laboratory 100% Standard Analytic File (Lab SAF) contains complete records on every Medicare Part B lab claim processed by Medicare Part B carriers. The file includes information identifying the lab provider, beneficiary residence, and referring provider (which can be linked to the referring provider's ZIP code). Therefore, the file supports analyses of lab market share and beneficiary and specimen origins.

The principal limitation of the Lab SAF is its size. With hundreds of millions of individual lab claims, analyzing the data set is slow computationally and requires enormous amounts of data storage. To overcome this problem, we obtained separate extracts of Lab SAF data for Tennessee and North Carolina. Claims were included in the Tennessee extract if

- the lab performing the test was located in Tennessee;
- the beneficiary lived in Tennessee; or

- the referring physician who drew the specimen practiced in Tennessee.

The North Carolina extract was constructed in a similar fashion. Even these extracts are large, with each extract filling five data cartridges.

As with the other data sets based on claims processed by Medicare Part B carriers, the Lab SAF excludes hospital outpatient lab claims.

Outpatient 100% Standard Analytic File

Outpatient SAF

- Strengths
  - ✓ provides hospital outpatient lab data
- Limitations
  - ✓ size
  - ✓ different variables than other lab files

By providing information on Part B lab tests performed by hospital outpatient labs and processed by Part A fiscal intermediaries, the Outpatient 100% Standard Analytic File (Outpatient SAF) fills the gap left by the preceding data sets. Like the LAB SAF, the Outpatient SAF contains individual claims and is consequently quite large. For example, the subset of the Outpatient SAF containing lab claims fills 78 data cartridges. Consequently, analyzing the data set poses programming difficulties.

The variables contained on the Outpatient SAF differ somewhat from those contained on the data sets generated from claims processed by Part B carriers. For example, the Outpatient SAF does not contain a referring provider number, limiting our ability to perform analyses based on the location where the specimen is drawn.

Lab Procedure Definitions and Timing

We apply a uniform definition of lab tests across data sets.

Findings synthesized across data sets are most meaningful when the subject being analyzed (in our case, lab tests) is defined uniformly across data sets. In each of our analyses, we defined clinical lab tests to include all HCPCS procedure codes between 80000 and 89999, with the exceptions of

- 80500-80599 (clinical pathology consultations);
- 88000-88099 (anatomic pathology, postmortem examination); and
- 88200-89399 (cytogenetic studies and surgical pathology).

We also included the following common HCPCS lab procedures that begin with a letter in our analyses:

- G0001—drawing blood for specimen,
- P3000—screen pap by tech w MD supv.,

- P9604—one-way allowed prorated trip, and
- P9605—routine venipuncture.

Finally, we included HCPCS code 36415 (routine venipuncture for collection of specimen).

Because of this definition, our results for total volume, allowed charges, and submitted charges will differ somewhat from totals reported elsewhere that are based on all HCPCS procedures between 80000 and 89999.

For most of our analyses, we used calendar year 1994 as our base year. Where appropriate, we updated our analysis to use the most recent data available.

Findings synthesized across data sources are also more meaningful if the same base year is used for all analyses. For most of our analyses, we used calendar year 1994 as our base year. For many of the data sets, this was the last complete year of data available when we began our analysis. We recognize that there is an inherent lag between the time when analytic data sets become available and current market conditions. Where it is appropriate and feasible, such as the case with market shares, we updated our analysis to use the most recent data available. For other analyses, timing is less critical because the key findings change little from year to year. For example, there is relatively little year-to-year change in the list of procedures with high allowed charges.

1.4 LTAC AND OTHER EXPERT INTERVIEWS

RTI conducted unstructured interviews with nearly every member of the LTAC, as well as a number of other experts on the clinical laboratory industry.

As part of the research phase of the project, RTI conducted unstructured interviews with almost every member of the original Laboratory Technical Advisory Committee (LTAC) who is primarily involved in lab operations. The following members of the LTAC were interviewed. As their brief biographies attest, members represent a broad spectrum of the lab industry, with a particular emphasis on laboratory service providers.

Stephen N. Bauer, M.D., FCAP. Director of Laboratories at Mercy San Juan, American River, and Folsom hospitals, three community hospitals with 210, 189, and 100 beds, respectively. Pathology services at the three hospitals are provided by Lieb and Paoletti Pathology Medical Group, Inc., a four-pathologist group practice of which Dr. Bauer has been a member since 1989. He is also an owner of Physician's Clinical Laboratory, a regional independent laboratory that serves five Sacramento hospitals; it is one of the largest independent laboratories in California. Nominated by College of American Pathologists.

Jerry Bennington, Sr., B.S. in Medical Technology, M.B.A. Regional Lab Manager for the Marshfield Labs in Wisconsin. Manages regional reference lab and 25 satellite labs for the Marshfield Clinics. Nominated by American Medical Technologists.

Earl C. Buck. Chief Executive Officer of the System Laboratories at Samaritan Health System in Phoenix, Arizona. Past president of the Clinical Laboratory Management Association (CLMA) and a current member of its health care policy committee. Published "Case History of a Lab Consolidation" in the *Medical Laboratory Observer* and was a contributing author for *The CLMA Guide to Managing a Clinical Laboratory*. Nominated by CLMA.

John M. Emory. Assistant Director for Federal Affairs at the American Medical Association. Has worked extensively with representatives of the federal government, laboratory community, and pathology community on laboratory reimbursement, coverage, medical necessity, and physician office laboratory (POL) issues of interest to the physician community. Nominated by American Medical Association.

David Jackson. Senior Manager of Provider Reimbursement for Riverbend Government Benefits Administrator, the Medicare Part A fiscal intermediary for Tennessee. Currently responsible for Medicare audit and reimbursement for Tennessee providers served by Medicare Part A. Nominated by Tennessee's Medicare Part A Fiscal Intermediary.

Robert Murray, J.D., Ph.D. Director of Biochemistry at Lutheran General Hospital in Park Ridge, Illinois. Has chaired the American Association of Clinical Chemistry's Government Relations Committee and is currently a member of its Regulatory Affairs Task Force. Nominated by American Association of Clinical Chemistry.

Barry Portugal, M.B.A. President of Health Care Development Services, Inc., a strategic business planning management consulting firm. Invited by HCFA.

Alvin M. Salton, HCLD. Past president of the American Association of Bioanalysts and past chairman of the National Council on Health Laboratory Services. Laboratory director of Community Medical

Laboratory in Metuchen, New Jersey. Serves on the Laboratory Advisory Committee to the State of New Jersey. Nominated by American Association of Bioanalysts.

Polly Scanlon, Ph.D. President and CEO, American HealthCare Resources, Inc. Medical economist and managed health care consultant specializing in public and private sector joint ventures, managed care systems and operations design, financial analysis, information systems design and evaluation research, and ancillary services procurements. Nominated by Tennessee Association of Health Maintenance Organizations and TennCare.

David N. Sundwall, M.D. President of the American Clinical Laboratory Association. Board-certified in internal medicine and family practice. Formerly Administrator, Health Resources and Services Administration, Public Health Services, U.S. Department of Health and Human Services and Assistant Surgeon General in the Commissioned Corps of the Public Health Services. Nominated by American Clinical Laboratory Association.

Ronald Weiss, M.D., M.B.A. Senior Vice-President and Director of Laboratories at the Associated Regional and University Pathologists (ARUP) Laboratories in Salt Lake City, Utah, the only commercial reference laboratory owned and operated by an academic department of pathology. Associate Professor in the Department of Pathology at the University of Utah School of Medicine. Nominated by American Society of Clinical Pathologists.

Alice S. Weissfled, Ph.D., ABMM. Director of Microbiology Specialists, Inc., in Houston, Texas. Diplomat of the American Board of Medical Microbiology of the American Academy of Microbiology and Adjunct Assistant Professor in the Department of Microbiology and Immunology at Baylor College of Medicine. Areas of expertise include virology, pathogenic bacteriology, mycobacteriology, administration, and regulatory affairs. Nominated by American Society for Microbiology.

Burton W. Willke, Ph.D. Director, Vermont State Public Health Laboratory, and President-elect, Association of State and Territorial Public Health Laboratory Directors. Certified specialist in microbiology and public management. Nominated by Association of State and Territorial Public Health Laboratory Directors.

Sandra Wood. Customer Service Branch, HCFA Region IV, Atlanta, Georgia. Invited by HCFA.

In addition to interviewing LTAC members, we also interviewed a number of other lab experts, including several lab managers in Tennessee, and toured LabCorp's national reference lab in Burlington, North Carolina. The other experts interviewed include the following:

Hank Clark, Kim Keyes, and Laura Hale, from LabCorp's corporate headquarters and national reference lab in Burlington, North Carolina.

Rebecca Laudicina, Assistant Professor of Clinical Laboratory Science at the University of North Carolina at Chapel Hill.

Bette Morris, M.B.A. CIGNA HealthCare.

Pennell C. Painter. Director of Clinical Chemistry at the University of Tennessee Hospital in Knoxville, Tennessee.

Christine Petersen. Chief Medical Officer for Prudential HealthCare's South Central Region.

Leo Serrano. Laboratory Director for the West Tennessee Health Care System in Jackson, Tennessee. The system includes a 600-bed hospital and four other facilities serving predominantly rural areas in western Tennessee.

Michael Stephens, Ph.D. Assistant Vice President, Health Tech Affiliates and General Manager of Memphis Pathology Laboratory and Baptist Regional Laboratory.

Methodology, Presentation, and Interpretation

The interviews typically lasted about an hour and followed an unstructured format with extensive follow-up questions. Questions were varied between interviews to take full advantage of the special perspectives and expertise of individual LTAC members. For example, members in areas with high managed care penetration were asked how managed care affects labs, hospital lab managers were asked about hospital lab operations, and purchasers were asked about their purchasing process.

Interviews focused on
- lab operations,
- costs,
- actual experience with competitive bidding and RFPs, and
- quality.

The interviews focused on providing general background about the clinical lab industry, not on the relative merits of competitive bidding for Medicare Part B clinical laboratory services. Thus, the interviews focused on lab operations, costs, actual experience with the bidding and RFP process, and quality. However, at the end of interviews, we offered respondents the chance to discuss briefly the concept of competitive bidding for Medicare tests, and respondents occasionally made parenthetical comments on competitive bidding earlier in the interviews.

In interpreting the results of the interviews, it is useful to keep in mind the inherent strengths and limitations of the expert interview approach. The LTAC brings together unparalleled expertise in virtually every aspect of the clinical laboratory field. Members are intimately involved in day-to-day lab operations, are well-informed on regulatory issues, and represent a wide variety of perspectives on the industry. Thus, the LTAC members and other experts are well-qualified to offer useful insights and background on the clinical industry.

At the same time, respondents do not represent a random sample of lab managers or any other population, nor was the sample size large enough to support formal statistical analysis, even if the same questions had been asked of all respondents. In addition, members' unique perspectives and interests undoubtedly shaped their responses to certain questions, especially those with a large subjective element. For these questions, it is useful to remember that the responses are anecdotal, not statistical.

Finally, we have attempted to synthesize results of the interviews in a balanced fashion. Any errors in interpretation are our own.

2

The Structure of the Clinical Laboratory Market Nationwide

Chapter Outline

2.1 National Market Share Data
2.2 Interstate Transport and State Market Shares
2.3 Medicare Part B Clinical Lab Trends
2.4 Antitrust and Office of Inspector General Actions
2.5 Financial Performance and Fee Trends
2.6 Lab Industry Technological and Economic Trends
2.7 Role of Managed Care

In this chapter, we examine the structure of the clinical laboratory market nationwide. Because the market has undergone a number of major changes in recent years, it is important to understand these changes before designing the demonstration project.

Market concentration is one of the key issues in any market analysis. We address this issue in Section 2.1 by examining the total number of labs and market shares of the major lab sectors and independent lab companies nationwide. We first present national and state market share information for the three major lab sectors—hospital labs, independent labs, and physician office labs (POLs)—based on volume data from the 1996 CLIA Provider File. We then present published estimates of sector market shares based on revenue and discuss recent trends in revenue by sector.

One of the most important recent changes in the clinical laboratory industry has been the rapid consolidation of the independent lab sector through a series of mergers and acquisitions. Whereas eight large lab companies had about 47 percent of the market share within this sector in 1989, a "Big Three" had emerged by 1996, with these companies accounting for about 57 percent of the sector market share. In the remainder of Section 2.1, we trace how consolidation has affected the market share of independent labs, both within the independent lab sector and in the overall lab market.

In Section 2.2, we turn to the issue of estimating state or local market shares. Such estimates are complicated by the interstate transport of lab specimens and Medicare claims. After discussing the importance of interstate transport, we recommend estimating state market shares based on the state where the lab specimen is originally drawn. Later, in Chapter 3, we use this basis to estimate state lab market shares for specimens drawn in Tennessee and North Carolina. However, the data requirements for this analysis are high. Therefore, in this section we present market share estimates for independent labs in selected states based on data from the CLIA Provider File and individual Part B carriers. Although these estimates have their limitations, they may provide coarse, but useful, information on states that have highly concentrated independent lab sectors.

National Medicare Part B trends for independent and physician office labs during the period 1992 through 1994 are examined in Section 2.3. We describe overall trends for test volume, allowed charges, and submitted charges, as well as independent labs' shares. for each of these variables. We also analyze the distribution of allowed charges and volume for individual procedures. This distribution has important implications for the demonstration project. We also identify a tentative list of common procedures to be bid upon in the demonstration project and show that the demonstration tests account for the bulk of allowed charges and volume in every state.

Although the growing consolidation in the independent lab sector may raise concerns about market concentration, the recent merger activity among independent lab companies has not been challenged by antitrust agencies. We discuss the approach of antitrust agencies to the industry in Section 2.4. The section also chronicles recent actions by the Office of the Inspector General.

In Section 2.5, we examine the recent poor financial performance of independent lab companies. Part of the struggles can be attributed to falling reimbursement from Medicare and other payers and the shift to managed care. We present fragmentary evidence on lab fees showing substantial fee differences between payers.

Other factors affecting lab financial performance include lab industry technological and economic trends. In Section 2.6, we summarize discussions with LTAC members and other experts on

- lab cost components,
- lab cost trends,
- integrated costs of care,

- individual lab data,
- perceived cost trends,
- profits, and
- overpriced and underpriced procedures.

The effects of managed care on the industry are described in greater detail in Section 2.7

Finally, the chapter concludes by analyzing whether hospital outpatient labs are an important supplier of Medicare Part B lab tests. Although lab tests performed by hospital outpatient labs are reimbursed under the Medicare Part B program, claims for the tests are actually processed by Medicare Part A fiscal intermediaries. Consequently, data on outpatient lab tests are not contained in the same data sets as data on tests performed by independent labs and POLs. Because the magnitude of outpatient testing has important implications for the demonstration project, we conducted analyses of outpatient lab claims data for Tennessee and North Carolina.

2.1 NATIONAL MARKET SHARE DATA

Test Volume by Sector

The clinical laboratory industry consists of three major types of labs:

- hospital labs,
- independent labs, and
- physician office labs (POLs).

The three types differ in number of facilities, test volume, target clientele, and test complexity. Table 2-1 shows the number of active Clinical Laboratory Improvement Amendment (CLIA)-certified labs and test volume for each lab sector, based on the 1996 CLIA Provider File. Lab types are based on CLIA information. On the CLIA application, labs select the one category most descriptive of lab type. This self-identification is not necessarily the same as the specialization contained in HCFA records, but there do not appear to be major differences between the two data sets.

Separate volume figures are reported for nonwaived and waived tests. Waived tests are relatively low-complexity procedures that take their name from the fact that most CLIA regulations are waived

Table 2-1. Number of CLIA-Certified Facilities and Test Volume, by Lab Type

Although POLs are more numerous, hospital and independent labs provide the bulk of nonwaived tests, which are more complex than waived tests.

		U.S. Number of Tests (Millions)			Share (%)		
Type of Facility	Number of Facilities	Nonwaived	Waived	Total	Nonwaived	Waived	Total
Hospital	8,896	2,883.9	91.8	2,975.7	52.4	22.3	50.3
Independent Lab	5,798	1,526.6	16.0	1,542.6	27.8	3.9	26.1
POL	89,769	402.8	120.1	522.9	7.3	29.3	8.8
Other	53,330	687.9	182.8	870.7	12.5	44.5	14.7
Total[a]	157,793	5,501.2	410.7	5,911.9	100.0%	100.0%	100.0%[a]

[a] Percentages do not add to 100 due to rounding.

Source: 1996 CLIA Provider File.

for labs that only provide these procedures. Waived tests account for 7 percent of all lab tests nationwide.

Hospital Labs

There are currently 8,896 CLIA-certified hospital lab facilities in the country, accounting for 52.4 percent of nonwaived volume, 22.3 percent of waived volume, and 50.3 percent of total volume (Table 2-1). The number of hospital lab facilities is about 50 percent higher than the number of hospitals because many hospitals operate multiple lab facilities. Nonwaived tests account for about 97 percent of hospital test volume.

Hospital labs primarily provide laboratory services to hospital inpatients and outpatients. Some hospitals also aggressively provide "outreach" testing to "nonpatients" (patients who never enter the hospital, but whose specimens are sent to the hospital for testing). Because of the acute nature of inpatient care, hospital labs are prepared to perform tests on an emergency, or stat, basis. Hospital lab test volume, like overall hospital bedsize, varies widely from facility to facility, but many hospital labs are quite large. Hospital labs perform a more complex and broader menu of test procedures than POLs, but generally perform a smaller menu of tests than the largest independent reference labs.

Independent Labs

A total of 5,798 independent lab facilities are currently certified by CLIA. This number greatly overstates the number of independent lab companies because many companies operate multiple lab facilities. For example, the 10 largest independent lab companies account for 1,540 CLIA-certified facilities. Independent labs receive specimens on referral from physicians and transport the specimens to central facilities, where large batches of tests can be processed efficiently. Independent labs perform 27.8 percent of all nonwaived tests performed in the country. Smaller independent labs receive most of their revenue from common tests with moderate complexity, while large independent reference labs and some independent specialty labs also perform rarer, high-complexity esoteric testing. Low-complexity waived tests account for only about one percent of independent lab volume.

POLs

POLs are the most common type of clinical laboratory, but the average POL is relatively small. POLs account for over half of the 157,793 CLIA-certified labs in the country, but they only provide 7.3 percent of the nonwaived test volume (Table 2-1). POLs typically serve their physician-owner's practice and are designed to provide quick and convenient test results. Most POLs perform a limited menu of low-complexity tests; when more complex tests are needed, physicians send specimens to hospital or independent labs. The lower complexity of POL testing is reflected in the sector's relatively high share of waived test volume. Over 20 percent of POL tests are waived tests.

Besides hospital, independent, and physician-office labs, 53,330 lab facilities in 20 other CLIA categories account for about 12.5 percent of nonwaived test volume. The other categories include ambulatory surgery centers, community clinics, home health agencies, health maintenance organizations, insurance, other practitioners, blood banks, and skilled nursing/nursing facilities. Like POLs, labs in the "Other" category of Table 2-1 are numerous, have relatively low volume, and perform a disproportionate share of low-complexity waived tests. Other labs perform nearly half of all waived tests, and waived tests account for about 21 percent of other labs' total volume. Because of their resemblance to POLs, other labs besides hospital and independent labs are often lumped together in the POL category when analysts discuss lab sectors. We will adopt this convention in the report.

State Shares

Table 2-2 shows test volume by lab sector for individual states, based on 1996 CLIA Provider File volume data for nonwaived tests. The table reveals some variation in market share across states. As with the national data, the hospital sector performed significantly more tests than the independent lab sector in most states, but the sectors performed roughly even numbers of tests in some states, and independent labs had higher market shares in a few states.

Among individual states, Tennessee had a slightly higher than average hospital market share and a slightly lower than average independent lab share. North Carolina had a slightly lower than

Table 2-2. Market Shares by Lab Sector by State, Based on CLIA Data
Hospital and independent labs had the two largest market shares in most states.

State	Total Volume (Millions)	Share of State Volume (%) Hospital	Independent Lab	POL	Other Labs
Alabama	164.4	27.4	59.3	6.3	6.9
Alaska	5.9	82.3	3.4	6.8	7.5
Arizona	97.3	29.4	42.9	8.9	18.8
Arkansas	41.0	60.5	10.4	18.5	10.6
California	595.4	38.8	39.6	5.9	15.7
Colorado	46.1	60.3	17.7	7.1	15.0
Connecticut	77.7	48.3	40.3	6.0	5.4
Delaware	8.8	74.6	14.8	3.7	6.9
District of Columbia	21.1	71.4	3.6	8.4	16.7
Florida	346.7	42.5	37.7	10.3	9.5
Georgia	156.1	50.2	26.9	13.4	9.5
Hawaii	14.7	52.0	32.9	3.7	11.4
Idaho	12.0	59.6	18.5	13.5	8.3
Illinois	255.5	58.5	27.6	3.7	10.2
Indiana	92.5	64.0	13.8	12.8	9.3
Iowa	46.8	63.1	14.1	13.4	9.4
Kansas	133.5	19.8	9.4	4.9	65.9
Kentucky	96.1	38.3	48.3	5.5	7.8
Louisiana	88.1	70.7	9.1	9.1	11.1
Maine	17.9	73.0	16.0	8.3	2.6
Maryland	109.5	58.4	24.8	7.0	9.7
Massachusetts	147.6	54.0	33.2	6.2	6.5
Michigan	229.3	51.1	31.7	5.7	11.5
Minnesota	65.6	52.8	14.5	14.1	18.6
Mississippi	50.7	51.3	18.3	12.1	18.3
Missouri	144.3	55.7	25.4	5.9	13.0

(continued)

Table 2-2. Market Shares by Lab Sector by State, Based on CLIA Data (continued)

		Share of State Volume (%)			
State	Total Volume (Millions)	Hospital	Independent Lab	POL	Other Labs
Montana	10.2	51.4	20.8	14.3	13.5
Nebraska	30.1	66.7	13.4	14.0	5.9
Nevada	35.4	50.5	35.4	4.6	9.6
New Hampshire	14.9	54.4	32.6	9.1	3.8
New Jersey	256.0	50.3	41.7	4.4	3.6
New Mexico	22.4	55.7	18.6	5.0	20.7
New York	483.9	62.1	22.5	6.8	8.7
North Carolina	150.9	49.7	30.3	7.8	12.1
North Dakota	13.1	37.5	11.2	6.6	44.7
Ohio	233.1	61.5	19.7	6.3	12.5
Oklahoma	55.8	55.4	10.5	9.4	24.6
Oregon	59.0	36.5	36.7	17.2	9.7
Pennsylvania	296.6	69.6	16.9	4.6	8.9
Rhode Island	22.6	50.3	39.7	3.0	7.1
South Carolina	51.1	71.0	4.9	11.3	12.8
South Dakota	13.0	42.4	28.0	13.6	16.0
Tennessee	116.6	53.9	24.4	10.7	11.0
Texas	337.2	51.1	27.2	8.0	13.7
Utah	28.6	52.1	29.9	3.9	14.0
Vermont	157.1	40.4	43.1	7.4	9.1
Virginia	157.1	40.4	43.1	7.4	9.1
Washington	4.8	84.1	3.5	7.7	4.7
West Virginia	88.1	61.6	10.1	16.8	11.5
Wisconsin	62.1	42.2	30.0	9.5	18.3
Wyoming	36.9	63.7	24.2	7.6	4.4
All States	5,912.0	52.4	27.8	7.3	12.5

Source: 1996 CLIA Provider File.

average hospital market share and a slightly higher than average independent lab share.

Table 2-2, like other tables using data from the CLIA Provider File, computed sector market shares based on lab location. As discussed in greater detail below, lab specimens are frequently transported across state lines, and specimen origin may provide a better foundation for the calculation of economic market areas. Consequently, market shares based on lab location may provide an incomplete picture of lab market structure.

Revenue by Sector

In terms of revenue, the overall size of the industry has been estimated at $30 to $35 billion (Info Trac Investext, 1995; Adelson, 1994; Rice, 1995), although the data sources for these estimates are unclear. Rice (1995) provides a fairly representative estimate of the market share for each segment in Table 2-3.

Table 2-3. Clinical Laboratory Industry Revenues by Segment
Hospital labs received about half of lab revenue, and independent labs and POLs split the remainder fairly evenly, according to Rice.

Segment	Revenue ($ Billions)	% of Total
Hospital Labs	15 – 17.5	50
Independent Labs	8.0-9.5	26
POLs	7.0-8.5	24
Total	$30.0 – 35.0	100%

Source: Rice, 1995.

Another estimate, by Peers & Co., put the 1996 hospital share of revenue at 46 percent, the independent lab share at 39 percent, and the POL share at 15 percent (Gore, 1995). Peers & Co. also estimated changes in revenue and market share over time, both for the industry as a whole and for the major lab sectors (Table 2-4). According to this estimate, the market for clinical laboratory services doubled from $18 billion to $36 billion between 1986 and 1996. Independent labs gained market share, at the expense of hospital labs and, especially, POLs. Most other analysts agree that POL market share has been falling in recent years, but not all are convinced that the hospital share has fallen (Gore, 1995).

Both Rice's and Peers and Co.'s market share estimates diverge somewhat from the market shares based on test volume from the

Table 2-4. Estimated Changes in Laboratory Industry Revenue and Market Share by Segment

According to Peers & Co., the market share for independent labs has increased in recent years, at the expense of hospitals and POLs.

	1986		1996 (est.)	
Sector	Revenue ($ Billions)	Market Share (%)	Revenue ($ Billions)	Market Share (%)
Hospital Labs	9.4	52	16.6	46
Independent Labs	3.6	20	14.0	39
POLs and Others	5.0	28	5.4	15
Totals	$18.0	100%	$36.0	100%

Source: Peers & Co. estimates as presented in Gore, 1995.

CLIA data in Table 2-1. The CLIA data gave a slightly higher market share to hospital labs and a considerably smaller market share to POLs than Table 2-3.

A number of factors may explain the differences in market shares. First, relative lab test volume may not provide an accurate measure of relative lab revenue if test complexity varies between lab sectors. Higher complexity tests produce higher revenues. Second, both hospital and POL lab revenues are difficult to estimate. Unlike most publicly owned independent labs, which release revenue data as part of their annual financial data, hospitals and physicians do not separately release data on lab revenues. In many cases, hospital revenue is not evenly directly affected by the number of laboratory tests provided. For example, Medicare prospective payments for a given diagnosis are independent of the number of lab tests provided. Third, POLs often serve as the residual category in market share studies; thus, this category often includes both POLs and "other" labs. Combining POL and "Other" total (nonwaived and waived) CLIA volume in Table 2-1 gives hospital labs 50 percent of the market, independent labs 26 percent, and POLs (and others) 24 percent. Fourth, Steve Campe of Peers & Co. noted that the volume percentage (as reported on CLIA) may be lower than the revenue percentage reported in the Peers & Co. study because physicians frequently bill patients for tests actually performed elsewhere (Gore, 1995). Finally, HCFA officials reported that some POLs apparently underreported test volume on their CLIA applications.

Despite the divergence in estimated market shares, the estimates are consistent with the following general statements:

- hospital labs provide about half of the overall market share,
- independent labs account for the next largest share, and
- the POL sector is the smallest of the three sectors.

The Independent Lab Sector

The recent merger activity has greatly changed the structure of the independent lab sector.

More is known about market shares within the independent laboratory sector than is known about market shares in the overall market, in part because the largest independent labs release financial information publicly and in part because of recent merger activity involving independent labs. The recent merger activity has greatly changed the structure of the independent lab sector.

A 1990 article that appeared in *HealthWeek*, which was based on research by Shearson-Lehman, listed the top eight independent labs and their nationwide market shares in 1989, as shown in Table 2-5 (Southwick, 1990).

Table 2-5. Top Eight Independent Labs and Their Nationwide Market Shares
in 1990, eight large lab companies combined for 47 percent of the independent lab sector with none of the companies having a dominant share.

Lab	Percentage
SmithKline Beecham	15
Roche Biomedical Labs	9
National Health Labs	8
MetPath	7
Damon Clinical Labs	3
Nichols Institute	2
Unilab	1
Allied Clinical Labs	1
All major labs	47
Local/regional labs	53

Source: Southwick, 1990.

The article predicted that the big labs would continue to gain market share at the expense of smaller independent and physician office labs, in part due to CLIA 88.

Since 1990, there has been great consolidation in the independent lab sector, with a number of large mergers and acquisitions occurring during the last 3 years:

- National Health Laboratories acquired Allied Clinical Labs in 1994 in a deal valued at about $220 million (Adelson, 1994). National Health Labs and Roche Biomedical Labs merged in April 1995 to form Laboratory Corporation of America Holdings (LabCorp).
- Corning, Inc., which has owned MetPath since 1982, operates its laboratory services through its wholly owned subsidiary Corning Life Sciences, Inc. Corning has been involved in a number of recent acquisitions:
  - ✓ In January 1993, Corning acquired 100 percent of certain Unilab facilities in Denver, Dallas, and Phoenix.
  - ✓ In June 1993, Corning outbid National Health Laboratories to acquire Damon Clinical Labs in a deal valued at $575 million (Adelson, 1993).
  - ✓ In September 1994, Corning acquired Nichols Institute in a deal valued at $325 million (Woodyard, 1994).
  - ✓ In 1994, Corning sold its California operations of Damon to Physicians Clinical Laboratory, Inc., for $51 million.
  - ✓ Other acquisitions include Central Diagnostic Labs ($36 million in 1989); Community Clinical Labs ($21 million in 1990); Pro Med Labs (Massachusetts, 1991); DeYor Laboratories, Maryland Medical Laboratories (June 1994); and Bioran Medical Laboratories (October 1994).
  - ✓ In May 1996, Corning announced it was spinning off its clinical laboratory and pharmaceutical services businesses to form two new, independent, publicly owned companies. The spinoffs were designed to allow Corning, Inc., to focus on its core communications and technologies business sectors.
- We have been unable to identify any significant mergers involving SmithKline Beecham. This may be because lab operations are only part of the company's business, and mergers with smaller labs are too small to show up on the company's annual report. SmithKline Beecham, the largest lab company in the industry, has dropped to third behind LabCorp and Corning during the recent wave of mergers and acquisitions.

Following is a roster of current affiliations for the eight largest firms in 1989:

LabCorp (estimated annual revenues $1.7 billion in 1995)

- National Health Laboratories
- Allied Clinical Labs
- Roche Biomedical Labs
- Other lab subsidiaries:

    - ✓ Reference Pathology Laboratory, Inc.
    - ✓ Physician Clinical Laboratories, Inc. (located in Illinois; not Physicians Clinical Laboratory, Inc., of California)
    - ✓ Sierra Nevada Laboratories, Inc.
    - ✓ Suburban Pathology Associates, Inc.

Corning Life Sciences (estimated annual revenues from lab services $1.7 billion in 1994)

- ➤ MetPath
- ➤ Damon (except California operations now belong to Physicians Clinical Laboratory, Inc.)
- ➤ Unilab (certain operations; Unilab still operates as an independent company in California)
- ➤ Nichols Institute (now Corning Nichols Institute)
- ➤ Other lab subsidiaries:
    - ✓ Clinical Pathology Facility, Inc.
    - ✓ DeYor CPF/MetPath, Inc.
    - ✓ Associated Clinical Labs (65 percent)
    - ✓ MetWest
    - ✓ Corning Bioran
    - ✓ Clinical Labs of Lincoln, Inc.
    - ✓ Pharmaceutical Laboratory Services, Inc. (Maryland)

SmithKline Beecham (estimated annual revenues from lab services $1.3 billion in 1994)

Unilab Corporation (operations not sold to Corning; estimated revenues of $150 million)

According to news reports, reasons for the mergers include

- ➤ economies of scale,
- ➤ potential cost savings from eliminating duplicated services in common service areas (which is closely related to economies of scale),
- ➤ expansion into new markets, and
- ➤ acquisition of new technology.

A financial analysis of LabCorp completed after the latest round of mergers reports the following market shares shown in Table 2-6 for the leading independent labs. As this table clearly shows, the recent merger wave has left the "Big Three" labs with a 57 percent share of the independent lab sector.

The recent merger wave has left the "Big Three" labs with a 57 percent share of the independent lab sector.

Table 2-6. Independent Laboratory Revenues by Company

After recent mergers and acquisitions, there is a clear Big Three atop the independent lab sector.

Company	Revenues ($ Millions)	% of Total
LabCorp	1,693	21
Corning/MetPath	1,670	21
SmithKline Beecham	1,225	15
Unilab Corp	150	2
Physicians Clinical Laboratory	115	2
Universal Standard Medical Laboratories	70	1
American Medical Labs	65	1
Lab-One	60	1
Meris	40	<1
Dianon	40	<1
Medical Lab Network	25	<1
MedExpress	20	<1
Specialty Labs	20	<1
Other Independent Labs	2,800	36
Total Independent Labs	$7,800	100%

Source: Rice, 1995.

Market Share by Volume

The previous tables calculated market share on the basis of revenue. We also used CLIA Provider File data on nonwaived tests to estimate independent lab companies' market shares by volume. This estimate was complicated by the fact that the public use CLIA Provider File provides no systematic way to identify all labs owned by a single company. To approximate lab ownership by leading lab companies, we used the CLIA facility name variable to group active CLIA-certified labs according to the roster of current lab affiliations.

For example, to compute the market share for LabCorp, we first sorted active lab names alphabetically and selected all labs with some combination of LabCorp, Laboratory Corporation of America, etc. To this list, we added all affiliated labs still operating under the names of National Health, Allied Clinical, Roche Biomedical, Reference Pathology, Physician Clinical, Sierra Nevada, and Suburban Pathology Associates Laboratories.

This approximation misses labs that are actually affiliated with a company, but have names that are not included in the roster.[1] Such labs are likely to be small.

The resulting volume-based market shares for independent labs are shown in Table 2-7. In order to reemphasize that independent labs are but one sector in the industry, we also show each independent labs' share of total nonwaived tests.

Table 2-7. Volume-Based Market Shares for Independent Labs
Market shares based on total (Medicare and non-Medicare) test volume can be calculated from the CLIA Provider File.

Company	Number of Labs	Test Volume	Share of Independent Labs (%)	Share of Total Market (%)
LabCorp	828	411,358,216	26.9	7.5
Corning Clinical	384	262,605,623	17.2	4.8
SmithKline Beecham	203	131,968,666	8.6	2.4
Alabama Reference	5	86,278,555	5.7	1.6
Unilab	26	53,138,216	3.5	1.0
Physicians Clinical	28	32,535,706	2.1	0.6
Universal Standard	61	15,277,092	1.0	0.3
American Medical Labs	2	12,913,350	0.8	0.2
Medical Technology Laboratories	1	7,300,000	0.5	0.1
Physicians Reference Laboratory	2	6,935,525	0.5	0.1

Source: 1996 CLIA Provider File.

The rankings based on CLIA total volume are fairly close to the rankings based on revenue shown in Table 2-6. The top seven labs in Table 2-6 appeared in the top eight in the CLIA rankings; the only additional lab in the latter rankings was Alabama Reference Lab, and its reported volume of 85 million tests for one lab may be a data entry error. LabCorp's market share based on CLIA volume was higher than its share of revenue, possibly because some of its labs had shut down or changed their names since the company formed from the merger of National Health Labs and Roche Biomedical Labs but are still listed as active labs in the CLIA file. Conversely,

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[1] A better approximation can be made by manually matching affiliated CLIA numbers between labs. We employ this method to compute market shares for Medicare and non-Medicare labs in selected states in Chapter 3. The method was not feasible at the national level because there are too many labs nationally.

SmithKline Beecham's market share appears to be smaller in Table 2-7 than in Table 2-6.

Two other aspects of Table 2-7 are worth emphasizing. First, the top 10 lab companies accounted for 1,540 of the 5,798 active CLIA-certified labs. (The labs have even more lab sites, since a single CLIA number can represent more than one lab site.) Thus, the 5,798 figure overstates the amount of competition between distinct lab companies in the industry.

Second, the independent lab companies' shares of the entire lab market are much lower than their shares of the independent lab sector. It is easy to lose sight of this fact when focusing solely on market shares within the independent lab sector.

2.2 INTERSTATE TRANSPORT AND STATE MARKET SHARES

Interstate Transport

Lab specimens are frequently drawn in one state and transported across state lines to be analyzed by labs in other states. Medicare claims are usually filed with the carrier in the state where the lab is located. However, one of the major independent lab companies, SmithKline Beecham, sends all or most of their claims across state lines to be processed by a central carrier. Another major lab company, Roche Biomedical (now part of LabCorp), sent its claims to a central carrier until April 1996.

The interstate transport of specimens and claims poses complications for both our research and the design of the demonstration project.

The interstate transport of specimens and claims poses complications for both our research and the design of the demonstration project. For research, interstate transport complicates estimation of market shares. It is possible to construct rough state market shares for independent labs using data from the CLIA Provider File on lab locations. However, the CLIA Provider File data contain no information on patient origins. It is thus possible for state market share information based on lab location to be distorted by the presence in the state of a reference lab that analyzes a large number of specimens from out of state. Carrier claims data does contain information on patient origins. As mentioned in the Introduction's description of data sources (Section 1.3), however, locational analysis of an individual carrier's claims will be incomplete because claims for tests that originate in the state but are processed out of state will be missing from the carrier's data set.

The design of the demonstration project must fully reflect and accommodate the transport of specimens across state lines. If the design ignores interstate transport, labs may respond strategically, particularly if competitive bidding produces a lower fee schedule in the demonstration area or the design penalizes losing labs. In these cases, labs would ship more tests out of the demonstration area to avoid the new fee schedule and/or penalties for losing.

Table 2-8 provides an approximate estimate of the magnitude of interstate transport of lab specimens and claims. The table, which is based on analyses performed by HCFA on the 1995 Lab SAF, shows the percentages of lab allowed charges for beneficiaries living in each state that were processed by the carrier(s) in that state and by carriers in other states. For example, 62 percent of the allowed charges generated by Alabama beneficiaries were processed by the Alabama Part B carrier, while the remaining 38 percent were processed by carriers in other states.

Out-of-state transport of lab specimens and lab claims is an important factor that should not be ignored in the design of the demonstration project.

The estimates are not perfect estimates of interstate transport because they were based on beneficiary location, not on the location where a test specimen was drawn. The beneficiary location may differ from the location where the specimen was drawn because the beneficiary intentionally sought medical treatment in a neighboring state (the border-crossing effect) or required medical care while traveling out of state (the snowbird effect). The estimates also do not distinguish between beneficiaries' specimens that were sent out of state for testing and specimens that were tested in state but had claims processed by out-of-state carriers.

Despite these limitations, Table 2-8 suggests that the magnitude of out-of-state transport is large and cannot be explained by border-crossing or snowbirds alone. The median percentage of allowed charges processed by in-state carriers was 69 percent; the median percentage of allowed charges processed by out-of-state carriers was 31 percent. Thus, out-of-state transport of lab specimens and lab claims is an important factor that should not be ignored in the design of the demonstration project.

Table 2-8. Percent of Allowed Charges for State Beneficiaries by Carrier Processing
The large shares of allowed charges for state beneficiaries processed by out-of-state carriers suggest that interstate transport of lab specimens is common.

State	Processed by State's Carriers (%)	Processed by Out-of-State Carriers (%)
Alabama	62	38
Alaska	43	57
Arizona	86	14
Arkansas	59	41
California	91[a]	9
Colorado	86	14
Connecticut	88	12
Delaware	64	36
District of Columbia	63	37
Florida	79	21
Georgia	69	31
Hawaii	96	4
Idaho	54	46
Illinois	72	28
Indiana	64	36
Iowa	66	34
Kansas	74[a]	26
Kentucky	78	22
Louisiana	62	38
Maine	68	32
Maryland	51	49
Massachusetts	80	20
Michigan	87	13
Minnesota	68[a]	32
Mississippi	69	31
Missouri	67[a]	33
Montana	68	32
Nebraska	79	21
Nevada	81	19
New Hampshire	66	34

(continued)

Table 2-8. Percent of Allowed Charges for State Beneficiaries by Carrier Processing (continued)

State	Processed by State's Carriers (%)	Processed by Out-of-State Carriers (%)
New Jersey	69	31
New Mexico	55	45
New York	68[a]	32
North Carolina	82	18
North Dakota	86	14
Ohio	73	27
Oklahoma	71	29
Oregon	80	20
Pennsylvania	73	27
Puerto Rico	79	21
Rhode Island	55	45
South Carolina	49	51
South Dakota	89	11
Tennessee	61	39
Texas	86	14
Vermont	62	38
Virgin Islands	30	70
Virginia	44	56
Washington	83	17
West Virginia	35	65
Wisconsin	79	21
Wyoming	63	37

[a] Total for multiple carriers serving state.

Source: HCFA Analysis of 1995 Lab SAF.

The design of the demonstration project should include provisions to ensure that carriers that process large numbers of out-of-state claims follow the rules and reimbursement schedules for the demonstration.

Table 2-9 reverses the analysis of Table 2-8 by showing the percentages of allowed charges processed by each carrier that came from beneficiaries living within and outside the carrier's jurisdiction. Four carriers—Delaware Blue Shield (Carrier Number 00570), District of Columbia Blue Shield (00580), Pennsylvania/New Jersey Blue Shield (00860), and North Carolina CIGNA (05535)—processed more than 50 percent of their lab allowed charges for out-of-state beneficiaries. Delaware Blue Shield and North Carolina CIGNA served as the central processing carriers for SmithKline Beecham and Roche labs, respectively, in 1995. District of Columbia Blue Shield's jurisdiction includes parts of Maryland and Virginia, accounting for many of its out-of-state lab claims, but about 22 percent of its allowed charges came from Georgia beneficiaries. Three national lab companies have large reference/esoteric labs in New Jersey, accounting for the large number of out-of-state lab claims processed by that state's carrier. Because these carriers process large numbers of out-of-state claims, the design of the demonstration project should include provisions to ensure that these carriers follow the rules and reimbursement schedules for the demonstration.

In Chapter 3, we present in-depth analyses of the flow of lab specimens, tests, and claims into and out of Tennessee and North Carolina.

State Market Shares

For the purpose of the demonstration project, we believe that the most appropriate market area definition is based on the location where the Medicare beneficiary's specimen is drawn.

As mentioned, the interstate transport of lab specimens and Medicare claims complicates estimation of state market shares. We can define the tests to be included in state lab markets in at least four ways:

- ➤ if the specimen is drawn in the state,
- ➤ if the beneficiary lives in the state,
- ➤ if the lab performing the test is located in the state, and
- ➤ if the Medicare carrier for the state processes the claim.

For the purpose of the demonstration project, we believe that the most appropriate market area definition is based on the location where the Medicare beneficiary's specimen is drawn. Under this interpretation, the objective of the demonstration project is to identify and reward labs that can provide services efficiently to beneficiaries seeking care within the demonstration area.

Table 2-9. Percent of Allowed Charges Processed by Carrier by Beneficiary Residence
Carriers for Delaware, the District of Columbia, Pennsylvania/New Jersey, and North Carolina processed especially large percentages of out-of-state claims.

Carrier No.	State	Carrier	Beneficiaries Residing in Carrier's State (%)	Beneficiaries Residing Out-of-State (%)
00510	Alabama	Blue Shield	95	5
00520	Arkansas	Blue Shield	92	8
00528	Arkansas/Louisiana	Blue Shield	96	4
00542	California	Blue Shield	82	18
00550	Colorado	Blue Shield	84	16
00570	Delaware	Blue Shield	4	97
00580	District of Columbia	Blue Shield	10	90
00590	Florida	Blue Shield	88	12
00621	Illinois	Blue Shield	87	13
00630	Indiana	Blue Shield	93	7
00640	Iowa	Blue Shield	93	7
00650	Kansas	Blue Shield	96	4
00655	Kansas/Nebraska	Blue Shield	91	9
00660	Kentucky	Blue Shield	64	36
00700	Massachusetts	Blue Shield	85	15
00720	Minnesota	Blue Shield	95	5
00740	Kansas City	Blue Shield	63	37
00751	Montana	Blue Shield	91	9
00780	New Hampshire/Vermont	Blue Shield	74	26
00801	Buffalo	Blue Shield	97	3
00803	Empire	Blue Shield	92	8
00820	North Dakota	Blue Shield	81	19
00825	North Dakota/Wyoming	Blue Shield	96	4
00860	Pennsylvania/New Jersey	Blue Shield	45	55
00865	Pennsylvania	Blue Shield	88	12
00870	Rhode Island	Blue Shield	93	7
00880	South Carolina	Blue Shield	95	5
00900	Texas	Blue Shield	88	12
00901	Texas/Maryland	Blue Cross/Blue Shield	81	19

(continued)

Table 2-9. Percent of Allowed Charges Processed by Carrier by Beneficiary Residence (continued)

Carrier No.	State	Carrier	Beneficiaries Residing in Carrier's State (%)	Beneficiaries Residing Out-of-State (%)
00910	Utah	Blue Shield	87	13
00951	Wisconsin	Wisconsin Physicians Service	95	5
00973	Puerto Rico	Blue Shield	99	1
00974	Virgin Islands	Blue Shield	96	4
01020	Alaska	Aetna	96	4
01030	Arizona	Aetna	86	14
01040	Georgia	Aetna	72	28
01120	Hawaii	Aetna	96	4
01290	Nevada	Aetna	85	15
01360	New Mexico	Aetna	94	6
01370	Oklahoma	Aetna	70	30
01380	Oregon	Aetna	92	8
01390	Washington	Aetna	86	14
02050	California	Occidental	95	5
05130	Idaho	CIGNA	93	7
05440	Tennessee	CIGNA	78	22
05535	North Carolina	CIGNA	37	63
10230	Connecticut	Travelers	69	31
10240	Minnesota	Travelers	58	42
10250	Mississippi	Travelers	87	13
10490	Virginia	Travelers	93	7
11260	Missouri	General American	69	31
14330	New York	Group Health Inc.	96	4
16360	Ohio	Nationwide	91	9
16510	West Virginia	Nationwide	86	14
21200	Maine	Blue Shield	95	5

Source: HCFA Analysis of 1995 Lab SAF.

We calculate market shares for Tennessee and North Carolina based on specimen origin and beneficiary location in Chapter 3. However, these calculations required detailed—and voluminous—data on individual lab claims. Repeating these calculation for other states was beyond the scope of the project. Also in Chapter 3, we present market shares for independent labs in states bordering on Tennessee based on total (Medicare and non-Medicare) test volume from the CLIA Provider File.

In Appendix A, we present market shares for independent labs in selected states based on lab claims processed by Medicare Part B carriers. Although we believe these estimates are not as good as estimates based on specimen origin, they can often provide coarse, but useful information on lab concentration. In particular, a very high market share calculated on the basis of carrier processing can signal a relatively concentrated market (the market should still be studied for the presence of a large reference lab, however). Market shares can be calculated relatively easily using these definitions.

HCFA asked carriers to compute independent lab market shares based on the claims they processed. These appear in the "Market Share" column in the Appendix A tables. To adjust for the fact that SmithKline Beecham and Roche (now part of LabCorp) claims were processed centrally by a single carrier for each firm, rather than by the carrier in the state where the labs were located, we calculated the "Adjusted Market Share" by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures should be interpreted cautiously because carriers did not report their data in uniform ways. Only labs with market shares greater than one percent are shown.

Adjusting raw carrier data to account for SmithKline Beecham and LabCorp claims significantly affected market shares.

Key general results from the tables include:

- A number of states appeared to be quite concentrated, especially after the adjustment for SmithKline Beecham and LabCorp.
- One or more of the Big Three labs had sizable market shares in most states.
- Few labs besides the Big Three had market shares greater than one percent in even two states.

The tables also show the importance of adjusting raw carrier data to account for claims that are performed by SmithKline Beecham or LabCorp labs within the carrier's jurisdiction but are not processed by the carrier. The adjustment had especially marked effects on independent lab market shares in Alabama, Illinois, Mississippi, Tennessee, Virginia, and West Virginia.

2.3 MEDICARE PART B CLINICAL LAB TRENDS

Volume and Allowed and Submitted Charges

Table 2-10 shows overall trends in Medicare Part B clinical lab volume and allowed and submitted charges for 1992 through 1994. For comparative purposes, figures from the late 1980s are also reported. Because the data are from the Physician/Supplier Procedure Summary File, only lab claims processed by Medicare carriers are included. Thus, hospital outpatient lab tests are excluded.

Table 2-10. Part B Lab Tests Excluding Hospital Outpatient Labs
Test volume and allowed charges remained virtually unchanged from 1992 to 1994, in marked contrast to earlier years.

	1994	1993	1992	1989	1988	1987	1986
Volume (millions)	313	306	314	185	162	140	126
Allowed ($ millions)	2,961	3,013	2,908	1,777	1,431	1,243	1,054
Submitted ($ millions)	6,860	6,363	6,011	3,207	2,599	2,153	1,770

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: Physician/Supplier Procedure Summary File, 1992-1994; Hoerger, Waters, and Sloan, 1991.

In contrast to the late 1980s, when test volume and allowed charges regularly increased by more than 10 percent per year, lab volume and allowed charges have been nearly flat during the early 1990s. Test volume fell slightly between 1992 and 1993, before rebounding nearly to its 1992 level in 1994. Allowed charges actually fell in 1994, after a modest increase in 1993. Because submitted charges continued to rise at a rate of more than 5 percent per year, the ratio of allowed to submitted charges declined to 43 percent in 1994.

Independent Labs

Test volume and allowed charges for independent labs largely mirrored the overall trends for 1992 through 1994 (Table 2-11).

Table 2-11. Part B Lab Tests, Specialty=Clinical Labs, Billing Independently
Independent labs' volume and market share changed only slightly between 1992 and 1994, but their overall market share increased.

		1994	1993	1992
Volume	(millions)	184	178	179
	% of total volume	58.8%	58.2%	57.0%
Allowed	($ millions)	1,968	1,982	1,888
	% of total allowed charges	66.5%	65.8%	64.9%
Submitted	($ millions)	4,650	4,195	3,837
	% of total submitted charges	67.8%	65.9%	63.8%

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Test volume dipped slightly in 1993, before increasing modestly in 1994. Allowed charges increased by about 5 percent in 1993, but fell in 1994 despite the increase in volume. Submitted charges increased by about 10 percent per year.

Table 2-11 also shows that the independent lab sector's share of test volume and allowed charges increased between 1992 and 1994. This finding is consistent with press reports that independent labs have been increasing market share at the expense of POLs. The independent lab sector's market share based on allowed charges is higher than its market share based on test volume. Historically, independent labs have performed a more expensive mix of lab tests than POLs, explaining the higher market share based on allowed charges. The table provides no information on the Medicare Part B market share of hospital outpatient labs because their tests are not included on the Physician/Supplier Procedure Summary File.

Independent labs can be defined in two ways using the Physician/Supplier Procedure Summary File. In Table 2-11, independent labs are defined on the basis of specialty, and this method probably provides the most accurate definition. However, tests can also be classified as independent lab tests when their place of service is listed as an independent lab. Test volume and allowed and submitted charges under this definition are presented in Table 2-12. The trends for independent labs shown in Table 2-12 are basically the same as those in Table 2-11: volume and allowed charges changed little, despite a large increase in submitted charges,

Table 2-12. Part B Lab Tests, Place of Service=Independent Labs
Defining independent labs based on place of service does not affect basic conclusions about lab trends.

		1994	1993	1992
Volume	(millions)	169	160	159
	% of total volume	54.0%	52.3%	50.5%
Allowed	($ millions)	1,832	1,805	1,709
	% of total allowed charges	61.9%	59.9%	58.8%
Submitted	($ millions)	4,355	3,839	3,471
	% of total submitted charges	63.5%	60.3%	57.7%

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.
Source: Physician/Supplier Procedure Summary File, 1992-1994.

and the market share of the independent lab sector grew during the period. Because results are similar for the two definitions of independent labs, we define labs based on specialty when using the Physician/Supplier Procedure Summary File throughout the remainder of this report.

Independent Lab Shares by Carrier Jurisdiction

As mentioned earlier, lab claims in the Physician/Supplier Procedure Summary File are classified by Part B carrier, rather than by the state where beneficiaries reside or by the state where lab specimens are drawn. As a result, the Physician/Supplier Procedure Summary File provides only partial information on the share of lab tests performed in each state by independent labs.

Keeping this limitation in mind, Table 2-13 shows independent labs' share of Medicare Part B test volume and allowed charges processed by each carrier in 1994. As with other tables based on the Physician/Supplier Summary File, the data do not include information on hospital outpatient testing. Based on allowed charges, the shares varied dramatically, from lows of 6 and 9 percent processed by Blue Shield in Minnesota and Traveler's in Minnesota to a high of nearly 100 percent by Blue Shield in Delaware. The variation in shares was equally wide based on allowed charges or based only on demonstration tests (not shown).

The share of independent labs in Tennessee, from the Physician/Supplier Procedure Summary File, was 51 percent based

Table 2-13. Independently Billed Labs Percent of Allowed Charges—Unadjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims
Based on unadjusted data, independent labs shares varied widely across carrier jurisdictions.

			Percent of Allowed Charges		
Carrier No.	State	Carrier	1994	1993	1992
00510	Alabama	Blue Shield	45	42	39
00520	Arkansas	Blue Shield	34	34	31
00528	Arkansas/Louisiana	Blue Shield	38	34	31
00542	California	Blue Shield	79	77	74
00550	Colorado	Blue Shield	80	77	78
00570	Delaware	Blue Shield	100	99	99
00580	District of Columbia	Blue Shield	84	84	85
00590	Florida	Blue Shield	61	62	63
00621	Illinois	Blue Shield	68	66	65
00630	Indiana	Blue Shield	52	50	50
00640	Iowa	Blue Shield	37	40	38
00650	Kansas	Blue Shield	32	33	33
00655	Kansas/Nebraska	Blue Shield	20	19	18
00660	Kentucky	Blue Shield	75	79	78
00690	Maryland	Blue Shield	68	66	67
00700	Massachusetts	Blue Shield	69	69	70
00710	Michigan	Blue Shield	63	63	63
00720	Minnesota	Blue Shield	6	16	21
00740	Kansas City	Blue Shield	53	53	52
00751	Montana	Blue Shield	44	44	43
00780	New Hampshire/ Vermont	Blue Shield	61	60	54
00801	Buffalo	Blue Shield	52	55	57
00803	Empire	Blue Shield	55	51	53
00820	North Dakota	Blue Shield	57	53	47
00825	North Dakota/Wyoming	Blue Shield	60	55	46
00860	Pennsylvania/New Jersey	Blue Shield	85	85	86
00865	Pennsylvania	Blue Shield	63	63	63
00870	Rhode Island	Blue Shield	73	77	83
00880	South Carolina	Blue Shield	18	19	18
00900	Texas	Blue Shield	62	62	63

(continued)

Table 2-13. Independently Billed Labs Percent of Allowed Charges—Unadjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims (continued)

Carrier No.	State	Carrier	Percent of Allowed Charges		
			1994	1993	1992
00910	Utah	Blue Shield	67	70	70
00951	Wisconsin	Wisconsin Physicians Service	31	21	24
00973	Puerto Rico	Blue Shield	96	95	94
01020	Alaska	Aetna	42	44	43
01030	Arizona	Aetna	65	67	68
01040	Georgia	Aetna	65	63	59
01120	Hawaii	Aetna	81	80	76
01290	Nevada	Aetna	66	64	58
01360	New Mexico	Aetna	62	63	62
01370	Oklahoma	Aetna	60	62	57
01380	Oregon	Aetna	57	57	58
01390	Washington	Aetna	58	59	59
02050	California	Occidental	62	59	59
05130	Idaho	CIGNA	35	35	33
05440	Tennessee	CIGNA	51	53	51
05535	North Carolina	CIGNA	89	90	90
10071	RRB	Travelers	64	63	62
10230	Connecticut	Travelers	76	76	78
10240	Minnesota	Travelers	9	9	9
10250	Mississippi	Travelers	51	45	43
10490	Virginia	Travelers	21	14	12
11260	General American	General American	65	61	62
14330	New York	Group Health Inc.	35	32	27
16360	Ohio	Nationwide	56	56	53
16510	West Virginia	Nationwide	20	21	20
21200	Maine	Blue Shield	50	49	46

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1994 Physician/Supplier Procedure Summary File.

on allowed charges. The independent lab market share was lower in 16 other carrier jurisdictions and higher in 39 other carrier jurisdictions. Based on these figures, Tennessee appears to have had a smaller independent lab sector and a larger POL sector than most other states.

However, the independent lab shares reported in Table 2-13 for two states—Delaware and North Carolina—are misleading because the carriers for these jurisdictions processed most claims generated nationwide for two of the largest independent labs. In 1994, Blue Shield of Delaware processed most lab claims for SmithKline Beecham, and CIGNA North Carolina processed claims from Roche Biomedical Labs (now part of LabCorp). Thus, the reported market shares for independent labs in Delaware (nearly 100 percent) and North Carolina (89 percent) are overstated. Conversely, the independent lab shares in states with large SmithKline and Roche labs are understated, because claims for those labs were assigned to Delaware and North Carolina in the Physician/Supplier Procedure Summary File.

To make a more meaningful assignment of lab claims to states, we used the locality pricing code variable in the Physician/Supplier Procedure Summary File to reassign SmithKline and Roche lab claims to the states where those claims originated. SmithKline claims were successfully reassigned for 1992, 1993, and 1994, and Roche claims were successfully reassigned for 1992 and 1993; the necessary information to reassign Roche claims was not available on the file in 1994. The adjusted sector market shares are shown in Table 2-14.

Focusing on 1993, which contains adjustments for both SmithKline and Roche, a comparison of Tables 2-13 and 2-14 shows that the adjustments had large effects on some states' independent lab sector shares. The independent lab share in Delaware fell from 99 percent to 96 percent and the share in North Carolina fell from 90 percent to 79 percent with the adjustment. Other states had large increases:

- Alabama: 42 percent to 56 percent
- Arkansas/Louisiana: 34 percent to 45 percent
- Kansas: 33 percent to 40 percent
- Maryland: 66 percent to 72 percent
- Minnesota Blue Shield: 16 percent to 38 percent

Table 2-14. Independently Billed Labs Percent of Allowed Charges—Adjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims
After adjustment, independent lab shares fell for Delaware and North Carolina, which served as carriers for SmithKline Beecham and Roche, respectively, and rose for other states.

Carrier No.	State	Carrier	Percent of Allowed Charges 1994[a]	1993	1992
00510	Alabama	Blue Shield	45	56	53
00520	Arkansas	Blue Shield	34	34	31
00528	Arkansas/Louisiana	Blue Shield	46	45	41
00542	California	Blue Shield	79	77	74
00550	Colorado	Blue Shield	80	77	78
00570	Delaware	Blue Shield	99	96	83
00580	District of Columbia	Blue Shield	84	85	85
00590	Florida	Blue Shield	62	65	65
00621	Illinois	Blue Shield	71	70	68
00630	Indiana	Blue Shield	52	50	51
00640	Iowa	Blue Shield	37	40	38
00650	Kansas	Blue Shield	32	40	41
00655	Kansas/Nebraska	Blue Shield	20	20	20
00660	Kentucky	Blue Shield	75	79	78
00690	Maryland	Blue Shield	72	72	72
00700	Massachusetts	Blue Shield	71	71	72
00710	Michigan	Blue Shield	63	64	64
00720	Minnesota	Blue Shield	26	38	37
00740	Kansas City	Blue Shield	53	53	52
00751	Montana	Blue Shield	44	44	43
00780	New Hampshire/ Vermont	Blue Shield	61	60	54
00801	Buffalo	Blue Shield	52	55	57
00803	Empire	Blue Shield	55	51	53
00820	North Dakota	Blue Shield	57	53	47
00825	North Dakota/Wyoming	Blue Shield	60	55	46
00860	Pennsylvania/New Jersey	Blue Shield	85	87	87
00865	Pennsylvania	Blue Shield	68	69	68
00870	Rhode Island	Blue Shield	73	77	83
00880	South Carolina	Blue Shield	18	36	37

(continued)

Table 2-14. Independently Billed Labs Percent of Allowed Charges—Adjusted for Central Carrier Processing of SmithKline Beecham and Roche Lab Claims (continued)

Carrier No.	State	Carrier	Percent of Allowed Charges 1994[a]	1993	1992
00900	Texas	Blue Shield	62	63	64
00910	Utah	Blue Shield	67	70	70
00951	Wisconsin	Wisconsin Physicians Service	31	21	24
00973	Puerto Rico	Blue Shield	96	95	94
01020	Alaska	Aetna	42	44	44
01030	Arizona	Aetna	65	68	68
01040	Georgia	Aetna	65	67	64
01120	Hawaii	Aetna	81	80	76
01290	Nevada	Aetna	66	64	58
01360	New Mexico	Aetna	62	63	62
01370	Oklahoma	Aetna	60	62	57
01380	Oregon	Aetna	57	57	58
01390	Washington	Aetna	62	64	62
02050	California	Occidental	64	61	61
05130	Idaho	CIGNA	35	35	33
05440	Tennessee	CIGNA	58	62	60
05535	North Carolina	CIGNA	89	79	79
10071	RRB	Travelers	64	63	62
10230	Connecticut	Travelers	76	76	78
10240	Minnesota	Travelers	9	9	9
10250	Mississippi	Travelers	65	72	70
10490	Virginia	Travelers	21	40	42
11260	General American	General American	65	68	68
14330	New York	Group Health Inc.	77	84	78
16360	Ohio	Nationwide	59	64	61
16510	West Virginia	Nationwide	20	21	20
21200	Maine	Blue Shield	50	49	46

[a] Adjustments for Roche lab claims not available in 1994.

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1994 Physician/Supplier Procedure Summary File.

- Pennsylvania: 63 percent to 69 percent
- South Carolina: 19 percent to 36 percent
- Washington: 59 percent to 64 percent
- Tennessee: 53 percent to 62 percent
- Mississippi: 45 percent to 72 percent
- Virginia: 14 percent to 40 percent
- New York Group Health: 32 percent to 84 percent
- Ohio: 56 percent to 64 percent

After the adjustment, Tennessee was much closer to the middle of the distribution of independent lab sector market shares: 25 carrier jurisdictions had lower shares, 1 jurisdiction had the same share, and 30 jurisdictions had higher shares.

Even after the adjustment, the Physician/Supplier Procedure Summary File does not provide a complete picture of the origin of lab claims by state. The adjustment only affected SmithKline and Roche claims; other labs may send their claims to be processed by out-of-state carriers. More importantly, the Physician/Supplier Procedure Summary File cannot trace the state of origin for lab specimens that were drawn in one state and sent to an out-of-state lab for testing. To trace such claims, analysis of individual lab claims is necessary. We will perform analysis of Tennessee and North Carolina lab claims in Chapter 3.

Individual Procedures

By limiting the demonstration to the most common tests, some of the complexity of bidding for the full spectrum of 881 different lab procedures can be reduced. This limitation will have little effect on the potential cost savings from the demonstration, because the bulk of lab allowed charges will still be covered.

In 1994, 881 different clinical laboratory procedures were performed by independent labs, POLs, and other labs submitting claims through Medicare Part B carriers. The procedures are arrayed by HCPCS numbers in Appendix B, which summarizes lab data from the 1994 Physician/Supplier Procedure Summary File. As with other tables based on the Physician/Supplier Procedure Summary File, the data do not include information on hospital outpatient testing. The appendix clearly shows that procedures vary greatly in allowed charges and volume. However, although the format of the appendix makes it easy to look up individual procedures by HCPCS numbers, the large number of lab procedures makes the appendix cumbersome for analyses of the allowed charges and volumes. To facilitate such analyses, we present a series of tables that rank the top 100 laboratory procedures based on allowed charges and volume.

Table 2-15 shows the top 100 lab procedures ranked in order of allowed charges for 1994. A relatively small number of lab procedures accounted for the vast majority of allowed charges nationwide. The top 25 lab procedures accounted for 63 percent of total lab allowed charges, the top 50 procedures accounted for 78 percent, the top 75 accounted for 86 percent, and the top 100 accounted for 90 percent.

This distribution of allowed charges has important implications for the design of the clinical laboratory demonstration project. By limiting the demonstration to the most common tests, some of the complexity of bidding for the full spectrum of 881 different lab procedures can be reduced. This limitation will have little effect on the potential cost savings from the demonstration because the bulk of lab allowed charges will still be covered.

Tables 2-16 and 2-17 show the top 100 procedures ranked by allowed charges for 1993 and 1992, respectively. As in Table 2-15, most lab allowed charges are accounted for by a relatively small number of procedures. The top 25 procedures in 1993 accounted for about 59 percent of allowed charges, while the top 25 procedures in 1992 accounted for 60 percent of allowed charges.

The list of common lab procedures remained fairly constant over time (Table 2-18). Based on allowed charges, 19 blood/urine tests and automated hemograms ranked as the first- and second-most common procedures, throughout the 1992 to 1994 period. Seven of the top 10 procedures in 1994 ranked in the top 11 procedures in each of the previous years. An eighth procedure—HCPCS code G0001 (drawing blood for specimen)—was introduced in 1993; its predecessor code, 36415 (routine venipuncture for collection of specimen), was ranked third in allowed charges in 1993—the same position as G0001 in 1994—and fourth in allowed charges in 1992. Of the top 100 procedures in 1994, 68 were in the top 100 in the two preceding years, and of the 32 that were not in the top 100 in preceding years, 19 were ranked between 70 and 100 in 1994, where a relatively small change in allowed charges was enough to move a procedure into or out of the top 100 list.

Table 2-15. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1994 Nationwide

A relatively small number of lab procedures accounted for the vast majority of allowed charges. The top 25 procedures accounted for 63 percent of allowed charges, and the top 100 accounted for 90 percent.

			Allowed Charges		Volume	
Rank	HCPCS	Procedure Name	$	%	Number	%
1	80019	19 blood/urine tests	254,418,618	8.59	17,644,690	5.64
2	85025	Automated hemogram	164,955,013	5.57	15,775,378	5.04
3	G0001	Drawing blood for specimen	142,936,295	4.83	50,605,064	16.18
4	80092	Thyroid panel w/TSH	117,118,714	3.95	2,935,232	0.94
5	84443	Assay thyroid stim hormone	112,964,524	3.81	5,065,988	1.62
6	83718	Blood lipoprotein assay	109,648,793	3.70	10,171,411	3.25
7	85024	Automated hemogram	105,442,911	3.56	9,392,220	3.00
8	84153	Prostate specific antigen	105,377,003	3.56	4,768,813	1.52
9	80061	Lipid panel	90,906,979	3.07	4,541,265	1.45
10	81000	Urinalysis, nonauto, w/scope	81,250,559	2.74	18,589,319	5.94
11	85610	Prothrombin time	62,422,306	2.11	11,235,609	3.59
12	80162	Assay for digoxin	59,457,910	2.01	3,171,203	1.01
13	83550	Iron binding test	46,626,240	1.57	4,205,972	1.34
14	87086	Urine culture, colony count	42,075,766	1.42	3,911,629	1.25
15	82728	Assay ferritin	40,075,337	1.35	2,365,578	0.76
16	80016	13-16 blood/urine tests	38,495,295	1.30	2,730,400	0.87
17	83036	Glycated hemoglobin test	38,471,090	1.30	2,959,179	0.95
18	82947	Assay quantitative, glucose	36,663,590	1.24	6,849,241	2.19
19	83540	Assay iron	35,747,533	1.21	4,255,416	1.36
20	84436	Assay, total thyroxine	34,712,217	1.17	3,840,047	1.23
21	85023	Automated hemogram	34,622,548	1.17	3,015,999	0.96
22	80018	17-18 blood/urine tests	32,643,684	1.10	2,338,780	0.75
23	80091	Thyroid panel	30,796,066	1.04	1,757,267	0.56
24	80007	7 clinical chemistry tests	27,307,811	0.92	2,630,911	0.84
25	82378	Carcinoembryonic antigen	25,825,469	0.87	1,072,170	0.34
26	83735	Assay magnesium	25,555,961	0.86	2,909,170	0.93
27	82607	Vitamin B-12	24,866,061	0.84	1,203,637	0.38
28	85651	RBC sed rate, nonauto	24,619,270	0.83	5,034,910	1.61
29	83970	Assay of parathormone	24,090,956	0.81	432,471	0.14
30	80002	1-2 clinical chemistry tests	22,044,111	0.74	3,235,803	1.03
31	80185	Assay for phenytoin	20,988,865	0.71	1,157,479	0.37
32	87186	Antibiotic sensitivity, MIC	19,870,727	0.67	1,761,418	0.56
33	82985	Glycated protein	19,236,965	0.65	1,264,162	0.40

(continued)

Table 2-15. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1994 Nationwide (continued)

			Allowed Charges		Volume	
Rank	HCPCS	Procedure Name	$	%	Number	%
34	82270	Test feces for blood	18,866,934	0.64	6,479,944	2.07
35	P9604	One-way allow prorated trip	18,517,099	0.63	7,490,846	2.39
36	86316	Immunoassay, tumor antigen	18,404,596	0.62	774,789	0.25
37	87088	Urine bacteria culture	18,061,954	0.61	1,678,879	0.54
38	88104	Microscopic exam of cells	17,289,017	0.58	744,091	0.24
39	86287	Hepatitis B (HBsAg)	16,929,951	0.57	1,199,320	0.38
40	85027	Automated hemogram	16,497,447	0.56	1,905,394	0.61
41	82746	Blood folic acid serum	16,472,511	0.56	834,832	0.27
42	86003	Allergen specific IgE	15,599,347	0.53	333,931	0.11
43	85029	Automated hemogram	14,979,486	0.51	3,030,490	0.97
44	80198	Assay for theophylline	14,681,037	0.50	768,664	0.25
45	80006	6 clinical chemistry tests	13,821,465	0.47	1,438,177	0.46
46	87070	Culture specimen, bacteria	13,245,205	0.45	1,136,388	0.36
47	82172	Apolipoprotein	13,017,066	0.44	677,324	0.22
48	83721	Blood lipoprotein assay	12,713,730	0.43	1,044,212	0.33
49	84480	Total assay, TT-3	11,995,454	0.41	637,087	0.20
50	80004	4 clinical chemistry tests	11,539,807	0.39	1,339,416	0.43
51	87184	Antibiotic sensitivity, each	11,383,448	0.38	1,229,560	0.39
52	81002	Urinalysis nonauto w/o scope	11,350,198	0.38	3,409,871	1.09
53	84439	Assay, free thyroxine	11,282,620	0.38	923,982	0.30
54	80003	3 clinical chemistry tests	10,950,792	0.37	1,236,750	0.40
55	82108	Assay, aluminum	10,882,685	0.37	322,848	0.10
56	84132	Assay serum potassium	10,176,191	0.34	1,645,480	0.53
57	85021	Automated hemogram	9,996,461	0.34	1,320,168	0.42
58	84479	Assay triiodothyronine (T-3)	9,960,477	0.34	1,171,908	0.37
59	85730	Thromboplastin time, partial	9,649,247	0.33	1,173,692	0.38
60	88173	Interpretation of smear	8,756,212	0.30	177,122	0.06
61	80058	Hepatic function panel	8,604,100	0.29	885,961	0.28
62	85102	Bone marrow biopsy	8,223,069	0.28	142,199	0.05
63	P9605	Routine venipuncture	8,207,072	0.28	2,339,019	0.75
64	85095	Bone marrow aspiration	8,125,341	0.27	154,281	0.05
65	84066	Assay prostate phosphatase	8,078,887	0.27	631,090	0.20
66	88180	Cell marker study	7,922,693	0.27	389,574	0.12
67	84165	Assay serum proteins	7,803,674	0.26	528,166	0.17

(continued)

Table 2-15. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1994 Nationwide (continued)

			Allowed Charges		Volume	
Rank	**HCPCS**	**Procedure Name**	**$**	**%**	**Number**	**%**
68	80005	5 clinical chemistry tests	7,593,869	0.26	780,983	0.25
69	82977	Assay of GGT	7,584,075	0.26	901,600	0.29
70	82948	Reagent strip/blood glucose	7,567,565	0.26	1,816,803	0.58
71	84478	Assay triglycerides	7,423,853	0.25	1,033,714	0.33
72	80156	Assay carbamazepine	7,416,400	0.25	376,562	0.12
73	85022	Automated hemogram	7,357,899	0.25	978,932	0.31
74	80050	General health panel	6,961,093	0.24	162,735	0.05
75	85097	Bone marrow interpretation	6,958,279	0.23	170,988	0.05
76	86422	Radioallergosorbent tests	6,849,946	0.23	673,256	0.22
77	80008	8 clinical chemistry tests	6,725,516	0.23	610,949	0.20
78	86291	Hepatitis BS antibody test	6,666,105	0.23	462,125	0.15
79	88108	Cytopathology	6,647,887	0.22	252,008	0.08
80	80012	12 clinical chemistry tests	6,614,767	0.22	562,526	0.18
81	82150	Assay of amylase	6,398,542	0.22	740,757	0.24
82	85595	Platelet count, automated	6,260,454	0.21	1,000,571	0.32
83	86235	Nuclear antigen antibody	6,114,035	0.21	283,276	0.09
84	P3000	Screen pap by tech w MD supv	5,957,709	0.20	1,237,376	0.40
85	83719	Blood lipoprotein assay	5,569,489	0.19	396,442	0.13
86	82784	Assay gammaglobulin IgM	5,457,163	0.18	452,722	0.14
87	84403	Assay total testosterone	5,276,739	0.18	154,330	0.05
88	86038	Antinuclear antibodies	5,044,703	0.17	305,937	0.10
89	86255	Fluorescent antibody; screen	4,902,545	0.17	305,953	0.10
90	85031	Manual hemogram, complete CBC	4,833,730	0.16	604,499	0.19
91	85007	Differential WBC count	4,752,498	0.16	1,065,941	0.34
92	82465	Assay serum cholesterol	4,610,226	0.16	846,852	0.27
93	87163	Special microbiology culture	4,562,534	0.15	318,972	0.10
94	85030	Automated hemogram	4,345,279	0.15	893,713	0.29
95	86592	Blood serology, qualitative	4,289,401	0.14	1,051,158	0.34
96	86302	Hepatitis C antibody	4,272,002	0.14	237,491	0.08
97	80009	9 clinical chemistry tests	4,224,208	0.14	376,462	0.12
98	84466	Transferrin	4,166,262	0.14	250,040	0.08
99	84520	Assay urea nitrogen	4,114,298	0.14	789,125	0.25
100	84134	Prealbumin	4,054,665	0.14	199,336	0.06

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1994 Physician/Supplier Procedure Summary File.

Table 2-16. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1993 Nationwide

The top 25 procedures accounted for 59 percent of all lab allowed charges in 1993.

			Allowed Charges		Volume	
Rank	HCPCS	Procedure Name	$	%	Number	%
1	80019	19 blood/urine tests	246,710,794	8.19	16,438,913	5.36
2	85025	Automated hemogram	151,969,914	5.04	13,984,396	4.56
3	36415	Routine venipuncture for collection of specimen	135,497,975	4.50	48,265,800	15.74
4	84443	Assay thyroid stim hormone	134,842,862	4.48	5,658,796	1.85
5	85024	Automated hemogram	95,578,370	3.17	8,229,750	2.68
6	83718	Blood lipoprotein assay	89,844,492	2.98	8,587,779	2.80
7	80061	Lipid panel	86,797,083	2.88	3,313,423	1.08
8	81000	Urinalysis, nonauto, w/scope	85,405,008	2.83	18,852,278	6.15
9	86316	Immunoassay, tumor antigen	75,323,553	2.50	2,931,805	0.96
10	82728	Assay ferritin	67,405,817	2.24	3,926,730	1.28
11	83720	Blood lipoprotein assay	65,944,721	2.19	4,126,232	1.35
12	84153	Prostate specific antigen	57,492,469	1.91	2,074,443	0.68
13	85610	Prothrombin time	54,675,833	1.81	9,473,707	3.09
14	84436	Assay, total thyroxine	47,486,844	1.58	4,965,191	1.62
15	82947	Assay quantitative, glucose	42,158,463	1.40	7,522,219	2.45
16	80092	Thyroid panel w/TSH	41,629,806	1.38	999,869	0.33
17	87086	Urine culture, colony count	40,682,127	1.35	3,659,650	1.19
18	85023	Automated hemogram	37,907,533	1.26	3,212,114	1.05
19	83036	Glycated hemoglobin test	35,071,404	1.16	2,561,548	0.84
20	80016	13-16 blood/urine tests	34,050,891	1.13	2,329,274	0.76
21	86422	Radioallergosorbent tests	29,853,155	0.99	2,734,887	0.89
22	80162	Assay for digoxin	28,594,095	0.95	1,500,217	0.49
23	82643	RIA assay for digoxin	28,406,158	0.94	1,484,203	0.48
24	80018	17-18 blood/urine tests	26,335,463	0.87	1,815,905	0.59
25	83550	Iron binding test	26,133,593	0.87	2,348,973	0.77
26	83735	Assay magnesium	25,250,188	0.84	2,854,347	0.93
27	84479	Assay triiodothyronine (T-3)	22,269,419	0.74	2,505,692	0.82
28	82270	Test feces for blood	21,822,551	0.72	6,960,858	2.27
29	82607	Vitamin B-12	21,419,575	0.71	990,252	0.32
30	83970	Assay of parathormone	21,245,445	0.71	358,351	0.12
31	80007	7 clinical chemistry tests	20,874,099	0.69	1,961,876	0.64
32	85651	RBC sed rate, nonauto	20,800,107	0.69	4,042,112	1.32

(continued)

Table 2-16. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1993 Nationwide (continued)

			Allowed Charges		Volume	
Rank	HCPCS	Procedure Name	$	%	Number	%
33	85029	Automated hemogram	20,265,657	0.67	3,945,367	1.29
34	83540	Assay iron	19,997,185	0.66	2,280,969	0.74
35	87186	Antibiotic sensitivity, MIC	18,810,940	0.62	1,601,060	0.52
36	80002	1-2 clinical chemistry tests	18,323,009	0.61	2,664,453	0.87
37	80070	Thyroid panel	17,529,037	0.58	678,903	0.22
38	88104	Microscopic exam of cells	17,385,453	0.58	743,027	0.24
39	86287	Hepatitis B (HBsAg)	16,753,154	0.56	1,182,105	0.39
40	80091	Thyroid panel	16,638,560	0.55	885,945	0.29
41	87088	Urine bacteria culture	16,350,297	0.54	1,482,272	0.48
42	P9604	One-way allow prorated trip	16,246,745	0.54	6,560,118	2.14
43	85027	Automated hemogram	16,063,823	0.53	1,778,562	0.58
44	83555	Serum iron binding, auto-test	15,572,022	0.52	1,577,344	0.51
45	82756	Free thyroxine index (T-7)	15,237,795	0.51	1,113,856	0.36
46	80058	Hepatic function panel	14,583,937	0.48	929,562	0.30
47	82746	Blood folic acid serum	14,561,358	0.48	703,304	0.23
48	83545	Auto-assay serum iron	14,252,881	0.47	1,726,213	0.56
49	82378	Carcinoembryonic antigen	13,647,038	0.45	544,911	0.18
50	87070	Culture specimen, bacteria	13,555,787	0.45	1,125,002	0.37
51	82172	Apolipoprotein	13,435,108	0.45	683,690	0.22
52	84132	Assay serum potassium	13,179,470	0.44	2,018,619	0.66
53	80060	Hypertension panel	13,174,184	0.44	308,402	0.10
54	86151	CEA assay, RIA or EIA	12,876,308	0.43	521,745	0.17
55	80062	Cardiac evaluation panel	12,873,827	0.43	396,268	0.13
56	80006	6 clinical chemistry tests	12,660,696	0.42	1,277,560	0.42
57	87184	Antibiotic sensitivity, each	12,599,615	0.42	1,341,970	0.44
58	85021	Automated hemogram	12,003,196	0.40	1,527,383	0.50
59	80004	4 clinical chemistry tests	11,395,788	0.38	1,290,402	0.42
60	84480	Total assay, TT-3	11,271,728	0.37	578,343	0.19
61	80003	3 clinical chemistry tests	10,918,770	0.36	1,197,783	0.39
62	84478	Assay triglycerides	10,503,230	0.35	1,369,727	0.45
63	85022	Automated hemogram	10,486,477	0.35	1,345,521	0.44
64	84439	Assay, free thyroxine	10,274,052	0.34	814,808	0.27
65	80185	Assay for phenytoin	10,143,815	0.34	550,444	0.18
66	82108	Assay, aluminum	10,074,780	0.33	280,531	0.09

(continued)

Table 2-16. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1993 Nationwide (continued)

			Allowed Charges		Volume	
Rank	HCPCS	Procedure Name	$	%	Number	%
67	83721	Blood lipoprotein assay	9,555,621	0.32	570,941	0.19
68	81002	Urinalysis nonauto w/o scope	9,495,574	0.32	2,892,913	0.94
69	84045	Assay phenytoin	9,340,493	0.31	505,110	0.16
70	85730	Thromboplastin time, partial	8,964,471	0.30	1,048,117	0.34
71	84066	Assay prostate phosphatase	8,938,424	0.30	672,419	0.22
72	82948	Reagent strip/blood glucose	8,504,679	0.28	1,999,663	0.65
73	82977	Assay of GGT	8,492,436	0.28	914,380	0.30
74	80073	Renal panel	8,480,409	0.28	406,248	0.13
75	85102	Bone marrow biopsy	8,039,553	0.27	128,846	0.04
76	82465	Assay serum cholesterol	7,883,611	0.26	1,340,117	0.44
77	88173	Interpretation of smear	7,811,651	0.26	160,461	0.05
78	80198	Assay for theophylline	7,743,146	0.26	404,974	0.13
79	P9605	Routine venipuncture	7,675,974	0.25	2,276,154	0.74
80	84420	Assay theophylline	7,601,973	0.25	396,125	0.13
81	84165	Assay serum proteins	7,087,018	0.24	453,929	0.15
82	80005	5 clinical chemistry tests	6,973,685	0.23	712,464	0.23
83	85031	Manual hemogram, complete CBC	6,796,032	0.23	814,346	0.27
84	80012	12 clinical chemistry tests	6,734,010	0.22	560,887	0.18
85	82150	Assay of amylase	6,525,571	0.22	718,002	0.23
86	86319	Immunoassay for drugs	6,476,391	0.21	258,642	0.08
87	85095	Bone marrow aspiration	6,468,810	0.21	129,870	0.04
88	82985	Glycated protein	6,455,212	0.21	637,753	0.21
89	86317	Immunoassay, infectious agent	6,420,705	0.21	325,822	0.11
90	86291	Hepatitis BS antibody test	6,153,508	0.20	409,702	0.13
91	88180	Cell marker study	5,945,410	0.20	272,621	0.09
92	80008	8 clinical chemistry tests	5,733,976	0.19	505,193	0.16
93	88108	Cytopathology	5,697,120	0.19	220,804	0.07
94	85060	Blood smear interpretation	5,550,646	0.18	315,454	0.10
95	86255	Fluorescent antibody; screen	5,521,065	0.18	336,022	0.11
96	85097	Bone marrow interpretation	5,500,662	0.18	138,335	0.05
97	P3000	Screen pap by tech w MD supv	5,420,176	0.18	1,199,699	0.39
98	80050	General health panel	5,399,512	0.18	140,144	0.05
99	85007	Differential WBC count	5,149,602	0.17	1,102,278	0.36
100	83719	Blood lipoprotein assay	5,020,666	0.17	348,171	0.11

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1993 Physician/Supplier Procedure Summary File.

Table 2-17. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1992 Nationwide

The top 25 procedures accounted for 60 percent of lab charges in 1992.

			Allowed Charges		Volume	
Rank	**HCPCS**	**Procedure Name**	**$**	**%**	**Number**	**%**
1	80019	19 blood/urine tests	231,960,683	7.98	19,824,524	6.32
2	85025	Automated hemogram	132,659,297	4.56	12,817,634	4.09
3	84443	Assay thyroid stim hormone	129,862,377	4.46	5,675,239	1.81
4	36415	Routine venipuncture for collection of specimen	129,199,294	4.44	47,964,222	15.29
5	83720	Blood lipoprotein assay	124,031,339	4.26	8,027,601	2.56
6	86316	Immunoassay, tumor antigen	103,886,082	3.57	4,057,942	1.29
7	81000	Urinalysis, nonauto, w/scope	86,420,466	2.97	20,374,546	6.49
8	82728	Assay ferritin	82,263,338	2.83	4,493,018	1.43
9	83718	Blood lipoprotein assay	81,748,461	2.81	7,528,234	2.40
10	85024	Automated hemogram	78,865,152	2.71	7,174,181	2.29
11	80061	Lipid panel	68,357,260	2.35	2,378,382	0.76
12	82643	RIA assay for digoxin	54,314,448	1.87	2,889,141	0.92
13	84436	Assay, total thyroxine	47,465,954	1.63	5,229,539	1.67
14	82947	Assay quantitative, glucose	45,879,986	1.58	8,689,892	2.77
15	85610	Prothrombin time	45,453,685	1.56	8,246,333	2.63
16	85023	Automated hemogram	41,282,642	1.42	3,656,394	1.17
17	80070	Thyroid panel	39,423,896	1.36	1,653,788	0.53
18	87086	Urine culture, colony count	37,288,637	1.28	3,523,227	1.12
19	83036	Glycated hemoglobin test	30,305,886	1.04	2,317,340	0.74
20	80016	13-16 blood/urine tests	28,878,513	0.99	2,118,922	0.68
21	80062	Cardiac evaluation panel	26,520,103	0.91	852,244	0.27
22	83545	Auto-assay serum iron	26,090,966	0.90	3,096,525	0.99
23	86151	CEA assay, RIA or EIA	25,469,314	0.88	1,056,676	0.34
24	80060	Hypertension panel	24,736,987	0.85	639,168	0.20
25	80058	Hepatic function panel	24,530,539	0.84	1,043,307	0.33
26	84479	Assay triiodothyronine (T-3)	24,399,809	0.84	2,954,824	0.94
27	82756	Free thyroxine index (T-7)	23,801,374	0.82	1,820,493	0.58
28	80018	17-18 blood/urine tests	23,130,694	0.80	1,697,866	0.54
29	82270	Test feces for blood	21,098,349	0.73	7,530,911	2.40
30	85029	Automated hemogram	20,303,502	0.70	4,330,935	1.38
31	83555	Serum iron binding, auto-test	19,843,153	0.68	1,919,700	0.61
32	80073	Renal panel	18,846,638	0.65	951,630	0.30

(continued)

Table 2-17. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1992 Nationwide (continued)

Rank	HCPCS	Procedure Name	Allowed Charges $	Allowed Charges %	Volume Number	Volume %
33	82607	Vitamin B-12	18,725,291	0.64	901,241	0.29
34	87088	Urine bacteria culture	17,701,488	0.61	1,664,865	0.53
35	84045	Assay phenytoin	17,599,428	0.61	963,223	0.31
36	88104	Microscopic exam of cells	17,263,143	0.59	806,517	0.26
37	83970	Assay of parathormone	16,388,909	0.56	284,749	0.09
38	86422	Radioallergosorbent tests	16,359,687	0.56	1,621,840	0.52
39	87186	Antibiotic sensitivity, MIC	16,347,199	0.56	1,455,545	0.46
40	P9604	One-way allow prorated trip	16,178,263	0.56	7,235,352	2.31
41	84420	Assay theophylline	15,881,919	0.55	834,557	0.27
42	85027	Automated hemogram	15,878,957	0.55	1,854,177	0.59
43	85651	RBC sed rate, nonauto	15,828,391	0.54	3,238,541	1.03
44	84132	Assay serum potassium	15,269,680	0.53	2,454,488	0.78
45	80007	7 clinical chemistry tests	15,091,397	0.52	1,487,694	0.47
46	85022	Automated hemogram	15,071,240	0.52	2,042,329	0.65
47	86287	Hepatitis B (HBsAg)	14,612,408	0.50	1,058,285	0.34
48	80002	1-2 clinical chemistry tests	14,424,571	0.50	2,278,620	0.73
49	87070	Culture specimen, bacteria	14,138,421	0.49	1,222,081	0.39
50	87184	Antibiotic sensitivity, each	13,867,542	0.48	1,537,141	0.49
51	85021	Automated hemogram	13,485,342	0.46	1,815,986	0.58
52	82746	Blood folic acid serum	13,449,461	0.46	676,850	0.22
53	83550	Iron binding test	13,159,114	0.45	1,054,040	0.34
54	84478	Assay triglycerides	12,914,871	0.44	1,654,934	0.53
55	83735	Assay magnesium	12,304,490	0.42	1,427,232	0.45
56	80004	4 clinical chemistry tests	11,325,257	0.39	1,358,242	0.43
57	80006	6 clinical chemistry tests	10,904,916	0.37	1,170,497	0.37
58	84480	Total assay, TT-3	10,876,390	0.37	592,018	0.19
59	82465	Assay serum cholesterol	10,687,594	0.37	1,861,409	0.59
60	82172	Apolipoprotein	10,543,505	0.36	535,961	0.17
61	80003	3 clinical chemistry tests	10,294,035	0.35	1,198,697	0.38
62	86319	Immunoassay for drugs	10,038,088	0.35	416,300	0.13
63	85031	Manual hemogram, complete CBC	9,653,152	0.33	1,232,007	0.39
64	80065	Metabolic panel	8,987,201	0.31	299,480	0.10
65	84435	Assay thyroxine (T-4)	8,878,923	0.31	967,875	0.31

(continued)

Table 2-17. Allowed Charges and Volume for Top 100 Procedures, Ranked by Allowed Charges, 1992 Nationwide (continued)

Rank	HCPCS	Procedure Name	Allowed Charges $	Allowed Charges %	Volume Number	Volume %
66	83540	Assay iron	8,823,854	0.30	1,007,136	0.32
67	84439	Assay, free thyroxine	8,781,974	0.30	734,327	0.23
68	85650	RBC sedimentation rate	8,491,526	0.29	1,782,859	0.57
69	84066	Assay prostate phosphatase	8,486,530	0.29	664,933	0.21
70	86317	Immunoassay, infectious agent	8,378,515	0.29	440,970	0.14
71	82948	Reagent strip/blood glucose	8,271,807	0.28	2,107,713	0.67
72	82108	Assay, aluminum	8,267,283	0.28	240,649	0.08
73	85730	Thromboplastin time, partial	7,854,298	0.27	959,632	0.31
74	81002	Urinalysis nonauto w/o scope	7,843,998	0.27	2,558,284	0.82
75	80031	Drug monitoring, one drug	7,535,417	0.26	431,644	0.14
76	80099	Panel, not specified	7,460,823	0.26	233,013	0.07
77	P9605	Routine venipuncture	7,415,853	0.25	2,133,115	0.68
78	80012	12 clinical chemistry tests	7,287,095	0.25	638,386	0.20
79	85102	Bone marrow biopsy	7,236,564	0.25	126,148	0.04
80	88173	Interpretation of smear	7,196,607	0.25	153,947	0.05
81	84176	Special protein examination	7,111,329	0.24	1,138,721	0.36
82	82977	Assay of GGT	6,800,658	0.23	755,795	0.24
83	86256	Fluorescent antibody; titer	6,281,138	0.22	402,016	0.13
84	P3000	Screen pap by tech w MD supv	6,190,462	0.21	1,196,460	0.38
85	84165	Assay serum proteins	6,023,301	0.21	409,704	0.13
86	82150	Assay of amylase	5,952,183	0.20	682,790	0.22
87	85100	Bone marrow examination	5,928,940	0.20	75,786	0.02
88	85060	Blood smear interpretation	5,921,632	0.20	377,898	0.12
89	80005	5 clinical chemistry tests	5,913,930	0.20	642,993	0.20
90	86329	Immunodiffusion	5,883,135	0.20	355,445	0.11
91	88150	Cytopathology, pap smear	5,646,217	0.19	1,333,072	0.42
92	84520	Assay urea nitrogen	5,645,475	0.19	1,088,027	0.35
93	86255	Fluorescent antibody; screen	5,573,224	0.19	353,500	0.11
94	82565	Assay creatinine	5,528,420	0.19	815,569	0.26
95	82372	Assay serum carbamazepine	5,439,725	0.19	284,193	0.09
96	85007	Differential WBC count	5,398,035	0.19	1,225,159	0.39
97	85580	Blood platelet count	5,353,413	0.18	921,375	0.29
98	85044	Reticulocyte count	5,100,014	0.18	851,074	0.27
99	83930	Assay blood osmolality	5,019,464	0.17	572,257	0.18
100	86291	Hepatitis BS antibody test	4,999,136	0.17	344,794	0.11

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1992 Physician/Supplier Procedure Summary File.

Table 2-18. Rankings of Top 100 Procedures by Allowed Charges in 1994, in Earlier Years
Although some new procedures were introduced, most of the top 100 procedures in 1994 were also in the top 100 in preceding years.

HCPCS	Procedure Name	1994	1993	1992
80019	19 blood/urine tests	1	1	1
85025	Automated hemogram	2	2	2
G0001	Drawing blood for specimen	3	396	NA
80092	Thyroid panel w/TSH	4	16	NA
84443	Assay thyroid stim hormone	5	4	3
83718	Blood lipoprotein assay	6	6	9
85024	Automated hemogram	7	5	10
84153	Prostate specific antigen	8	12	NA
80061	Lipid panel	9	7	11
81000	Urinalysis, nonauto, w/scope	10	8	7
85610	Prothrombin time	11	13	15
80162	Assay for digoxin	12	22	NA
83550	Iron binding test	13	25	53
87086	Urine culture, colony count	14	17	18
82728	Assay ferritin	15	10	8
80016	13-16 blood/urine tests	16	20	20
83036	Glycated hemoglobin test	17	19	19
82947	Assay quantitative, glucose	18	15	14
83540	Assay iron	19	34	66
84436	Assay, total thyroxine	20	14	13
85023	Automated hemogram	21	18	16
80018	17-18 blood/urine tests	22	24	28
80091	Thyroid panel	23	40	NA
80007	7 clinical chemistry tests	24	31	45
82378	Carcinoembryonic antigen	25	49	NA
83735	Assay magnesium	26	26	55
82607	Vitamin B-12	27	29	33
85651	RBC sed rate, nonauto	28	32	43
83970	Assay of parathormone	29	30	37
80002	1-2 clinical chemistry tests	30	36	48
80185	Assay for phenytoin	31	65	NA
87186	Antibiotic sensitivity, MIC	32	35	39
82985	Glycated protein	33	88	161
82270	Test feces for blood	34	28	29
P9604	One-way allow prorated trip	35	42	40

(continued)

Table 2-18. Rankings of Top 100 Procedures by Allowed Charges in 1994, in Earlier Years (continued)

HCPCS	Procedure Name	1994	1993	1992
86316	Immunoassay, tumor antigen	36	9	6
87088	Urine bacteria culture	37	41	34
88104	Microscopic exam of cells	38	38	36
86287	Hepatitis B (HBsAg)	39	39	47
85027	Automated hemogram	40	43	42
82746	Blood folic acid serum	41	47	52
86003	Allergen specific IgE	42	NA	NA
85029	Automated hemogram	43	33	30
80198	Assay for theophylline	44	78	NA
80006	6 clinical chemistry tests	45	56	57
87070	Culture specimen, bacteria	46	50	49
82172	Apolipoprotein	47	51	60
83721	Blood lipoprotein assay	48	67	NA
84480	Total assay, TT-3	49	60	58
80004	4 clinical chemistry tests	50	59	56
87184	Antibiotic sensitivity, each	51	57	50
81002	Urinalysis nonauto w/o scope	52	68	74
84439	Assay, free thyroxine	53	64	67
80003	3 clinical chemistry tests	54	61	61
82108	Assay, aluminum	55	66	72
84132	Assay serum potassium	56	52	44
85021	Automated hemogram	57	58	51
84479	Assay triiodothyronine (T-3)	58	27	26
85730	Thromboplastin time, partial	59	70	73
88173	Interpretation of smear	60	77	80
80058	Hepatic function panel	61	46	25
85102	Bone marrow biopsy	62	75	79
P9605	Routine venipuncture	63	79	77
85095	Bone marrow aspiration	64	87	106
84066	Assay prostate phosphatase	65	71	69
88180	Cell marker study	66	91	117
84165	Assay serum proteins	67	81	85
80005	5 clinical chemistry tests	68	82	89
82977	Assay of GGT	69	73	82
82948	Reagent strip/blood glucose	70	72	71

(continued

Table 2-18. Rankings of Top 100 Procedures by Allowed Charges in 1994, in Earlier Years (continued)

HCPCS	Procedure Name	1994	1993	1992
84478	Assay triglycerides	71	62	54
80156	Assay carbamazepine	72	126	NA
85022	Automated hemogram	73	63	46
80050	General health panel	74	98	104
85097	Bone marrow interpretation	75	96	111
86422	Radioallergosorbent tests	76	21	38
80008	8 clinical chemistry tests	77	92	108
86291	Hepatitis BS antibody test	78	90	100
88108	Cytopathology	79	93	110
80012	12 clinical chemistry tests	80	84	78
82150	Assay of amylase	81	85	86
85595	Platelet count, automated	82	108	105
86235	Nuclear antigen antibody	83	113	123
P3000	Screen pap by tech w MD supv	84	97	84
83719	Blood lipoprotein assay	85	100	115
82784	Assay gammaglobulin IgM	86	110	118
84403	Assay total testosterone	87	101	109
86038	Antinuclear antibodies	88	132	181
86255	Fluorescent antibody; screen	89	95	93
85031	Manual hemogram, complete	90	83	63
85007	Differential WBC count	91	99	96
82465	Assay serum cholesterol	92	76	59
87163	Special microbiology culture	93	121	127
85030	Automated hemogram	94	106	113
86592	Blood serology, qualitative	95	111	107
86302	Hepatitis C antibody	96	151	NA
80009	9 clinical chemistry tests	97	128	135
84466	Transferrin	98	158	NA
84520	Assay urea nitrogen	99	109	92
84134	Prealbumin	100	221	NA

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Nevertheless, some new procedures did enter the list of top procedures, either as a result of new technology or revision in HCPCS codes. In addition to G0001, the following procedures that were not available in 1992 entered the top 50 list by 1994:

- 80091 thyroid panel (23rd in 1994)
- 80092 thyroid panel w/TSH (4th)
- 80162 assay for digoxin (12th)
- 80185 assay for phenytoin (31st)
- 80198 assay for theophylline (44th)
- 82378 carcinoembryonic antigen (25th)
- 84153 prostate specific antigen (8th)
- 86003 allergen specific IgE (42nd)
- 83721 blood lipoprotein assay (48th)

Of these, 80091 and 80092 represent the creation of popular thyroid panels by combining existing procedures, and 83721 is a new code for lipoprotein tests, which have long been common procedures for Medicare beneficiaries. The remainder are relatively new tests.

For demonstration purposes, the relative stability of the top 100 list implies that the list of procedures to be included in the demonstration and their relative weights can be based on past utilization patterns.

For demonstration purposes, the relative stability of the top 100 list implies that the list of procedures to be included in the demonstration and their relative weights can be based on past utilization patterns. The list should certainly be updated when new, potentially popular lab procedures are introduced or HCPCS codes are modified, but even these changes are likely to produce relatively small changes in the distribution of tests across procedures. A possible exception might occur if automated chemistry panels are substantially modified.

Instead of arraying procedures by allowed charges, procedures can be ranked by test volume. The three tables in Appendix C rank the top 100 procedures by volume for 1994, 1993, and 1992, respectively. As with allowed charges, a relatively small number of procedures accounted for the vast majority of lab test volume. For example, the top 25 procedures in 1994 accounted for 68 percent of test volume, the top 50 accounted for 81 percent, the top 75 accounted for 88 percent, and the top 100 accounted for 93 percent.

If anything, the rankings by volume are even more time-invariant than the rankings by allowed charges (Table 2-19). Nine of the top 10 procedures in volume in 1994 ranked among the top 11 procedures in each of the two previous years. The tenth 1994 procedure code, G0001 (drawing blood for specimen, ranked first in volume in 1994), replaced procedure code 36415, routine venipuncture for collection of specimen, which ranked first in 1992 and 1993. Seventy-six procedures remained in the top 100 throughout the period between 1992 and 1994; as with the allowed charge ratings, most of the procedures entering the volume ratings during the period were ranked between 70 and 100, where relatively small changes in volume are enough to move a procedure into or out of the top 100.

Does it matter whether one uses allowed charges or volume to define a list of common tests? Probably not. Table 2-20 compares the rankings by allowed charges and volume for 1994. The top 100 procedures by allowed charges are presented, as well as additional procedures whose test volume ranks among the top 100. Of the top 100 allowed charges, 84 procedures are also in the top 100 in volume.

For the purpose of defining demonstration tests, we believe that "common" tests should be defined on the basis of allowed charges, rather than volume.

The correlation between the allowed charge and volume rankings is not perfect because fees differ between procedures. For example, G0001, drawing blood for specimen, and 81000, urinalysis, non-automated, with scope, are very common procedures with relatively low fees. G0001 ranked first in volume, accounting for 16.2 percent of total volume, but ranked third in allowed charges, accounting for 4.8 percent of allowed charges. 81000 ranked second in volume, but tenth in allowed charges. The thyroid panel with TSH, 80092, is an example of a relatively high-fee procedure that ranks higher in allowed charges (4) than in volume (25).

For the purpose of defining demonstration tests, we believe that "common" tests should be defined on the basis of allowed charges, rather than volume. This belief is based in part on the knowledge that the rankings by allowed charges and volume are quite similar. More decisively, basing the definition on allowed charges identifies procedures where the potential savings from competitive bidding are largest.

Table 2-19. Rankings of Top 100 Procedures by Volume in 1994, in Earlier Years
Rankings of high-volume procedures were fairly constant across years.

HCPCS	Procedure Name	1994	1993	1992
G0001	Drawing blood for specimen	1	192	NA
81000	Urinalysis, nonauto, w/scope	2	2	2
80019	19 blood/urine tests	3	3	3
85025	Automated hemogram	4	4	4
85610	Prothrombin time	5	5	6
83718	Blood lipoprotein assay	6	6	9
85024	Automated hemogram	7	7	11
P9604	One-way allow prorated trip	8	10	10
82947	Assay quantitative, glucose	9	8	5
82270	Test feces for blood	10	9	8
84443	Assay thyroid stim hormone	11	11	12
85651	RBC sed rate, nonauto	12	14	19
84153	Prostate specific antigen	13	31	NA
80061	Lipid panel	14	18	25
83540	Assay iron	15	29	64
83550	Iron binding test	16	27	61
87086	Urine culture, colony count	17	17	18
84436	Assay, total thyroxine	18	12	13
81002	Urinalysis nonauto w/o scope	19	21	23
80002	1-2 clinical chemistry tests	20	24	27
80162	Assay for digoxin	21	41	NA
85029	Automated hemogram	22	15	15
85023	Automated hemogram	23	19	17
83036	Glycated hemoglobin test	24	25	26
80092	Thyroid panel w/TSH	25	59	NA
83735	Assay magnesium	26	22	47
80016	13-16 blood/urine tests	27	28	29
80007	7 clinical chemistry tests	28	34	45
82728	Assay ferritin	29	16	14
P9605	Routine venipuncture	30	30	28
80018	17-18 blood/urine tests	31	35	38
36415	Routine venipuncture for collection of specimen	32	1	1
85027	Automated hemogram	33	36	34
82948	Reagent strip/blood glucose	34	33	30
87186	Antibiotic sensitivity, MIC	35	38	46

(continued)

Table 2-19. Rankings of Top 100 Procedures by Volume in 1994, in Earlier Years (continued)

HCPCS	Procedure Name	1994	1993	1992
80091	Thyroid panel	36	66	NA
87088	Urine bacteria culture	37	43	39
84132	Assay serum potassium	38	32	24
80006	6 clinical chemistry tests	39	49	56
80004	4 clinical chemistry tests	40	48	48
85021	Automated hemogram	41	40	36
82985	Glycated protein	42	81	181
P3000	Screen pap by tech w MD supv	43	51	55
80003	3 clinical chemistry tests	44	52	54
87184	Antibiotic sensitivity, each	45	46	43
82607	Vitamin B-12	46	60	71
86287	Hepatitis B (HBsAg)	47	53	59
85730	Thromboplastin time, partial	48	58	68
84479	Assay triiodothyronine (T-3)	49	26	21
80185	Assay for phenytoin	50	87	NA
87070	Culture specimen, bacteria	51	55	53
81003	Urinalysis, auto, w/o scope	52	105	NA
85018	Hemoglobin	53	50	44
82378	Carcinoembryonic antigen	54	88	NA
85007	Differential WBC count	55	57	52
86592	Blood serology, qualitative	56	65	63
83721	Blood lipoprotein assay	57	85	NA
84478	Assay triglycerides	58	44	40
85595	Platelet count, automated	59	74	79
85022	Automated hemogram	60	45	31
84439	Assay, free thyroxine	61	69	80
82977	Assay of GGT	62	64	78
85030	Automated hemogram	63	61	65
80058	Hepatic function panel	64	63	62
88150	Cytopathology, pap smear	65	54	49
82465	Assay serum cholesterol	66	47	33
82746	Blood folic acid serum	67	75	82
85014	Hematocrit	68	62	50
84520	Assay urea nitrogen	69	67	58
80005	5 clinical chemistry tests	70	73	85

(continued)

Table 2-19. Rankings of Top 100 Procedures by Volume in 1994, in Earlier Years (continued)

HCPCS	Procedure Name	1994	1993	1992
86316	Immunoassay, tumor antigen	71	20	16
80198	Assay for theophylline	72	99	NA
88104	Microscopic exam of cells	73	71	76
82150	Assay of amylase	74	72	81
88156	TBS smear (Bethesda system)	75	113	NA
82172	Apolipoprotein	76	77	92
86422	Radioallergosorbent tests	77	23	42
82962	Glucose blood test	78	131	NA
85045	Reticulocyte count	79	114	235
84480	Total assay, TT-3	80	84	89
84066	Assay prostate phosphatase	81	80	83
87205	Smear, stain & interpret	82	83	90
80008	8 clinical chemistry tests	83	92	101
85031	Manual hemogram, complete	84	70	51
81015	Microscopic exam of urine	85	96	97
80012	12 clinical chemistry tests	86	86	87
81005	Urinalysis	87	82	77
84165	Assay serum proteins	88	95	99
85044	Reticulocyte count	89	79	73
82565	Assay creatinine	90	76	75
84460	Alanine amino (ALT) (SGPT)	91	120	128
86291	Hepatitis BS antibody test	92	97	106
82784	Assay gammaglobulin IgM	93	109	119
86430	Rheumatoid factor test	94	89	88
83970	Assay of parathormone	95	107	116
83719	Blood lipoprotein assay	96	108	122
82550	Assay CK (CPK)	97	112	110
88180	Cell marker study	98	126	142
80156	Assay carbamazepine	99	147	NA
80009	9 clinical chemistry tests	100	124	125

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Table 2-20. Rankings of Procedures by Allowed Charges and by Volume, 1994
Procedures with high allowed charges generally had high volume.

HCPCS	Procedure Name	Ranking by Allowed Charges	Ranking by Volume
80019	19 blood/urine tests	1	3
85025	Automated hemogram	2	4
G0001	Drawing blood for specimen	3	1
80092	Thyroid panel w/TSH	4	25
84443	Assay thyroid stim hormone	5	11
83718	Blood lipoprotein assay	6	6
85024	Automated hemogram	7	7
84153	Prostate specific antigen	8	13
80061	Lipid panel	9	14
81000	Urinalysis, nonauto, w/scope	10	2
85610	Prothrombin time	11	5
80162	Assay for digoxin	12	21
83550	Iron binding test	13	16
87086	Urine culture, colony count	14	17
82728	Assay ferritin	15	29
80016	13-16 blood/urine tests	16	27
83036	Glycated hemoglobin test	17	24
82947	Assay quantitative, glucose	18	9
83540	Assay iron	19	15
84436	Assay, total thyroxine	20	18
85023	Automated hemogram	21	23
80018	17-18 blood/urine tests	22	31
80091	Thyroid panel	23	36
80007	7 clinical chemistry tests	24	28
82378	Carcinoembryonic antigen	25	54
83735	Assay magnesium	26	26
82607	Vitamin B-12	27	46
85651	RBC sed rate, nonauto	28	12
83970	Assay of parathormone	29	95
80002	1-2 clinical chemistry tests	30	20
80185	Assay for phenytoin	31	50
87186	Antibiotic sensitivity, MIC	32	35
82985	Glycated protein	33	42
82270	Test feces for blood	34	10
P9604	One-way allow prorated trip	35	8

(continued)

Table 2-20. Rankings of Procedures by Allowed Charges and by Volume, 1994 (continued)

HCPCS	Procedure Name	Ranking by Allowed Charges	Ranking by Volume
86316	Immunoassay, tumor antigen	36	71
87088	Urine bacteria culture	37	37
88104	Microscopic exam of cells	38	73
86287	Hepatitis B (HBsAg)	39	47
85027	Automated hemogram	40	33
82746	Blood folic acid serum	41	67
86003	Allergen specific IgE	42	103
85029	Automated hemogram	43	22
80198	Assay for theophylline	44	72
80006	6 clinical chemistry tests	45	39
87070	Culture specimen, bacteria	46	51
82172	Apolipoprotein	47	76
83721	Blood lipoprotein assay	48	57
84480	Total assay, TT-3	49	80
80004	4 clinical chemistry tests	50	40
87184	Antibiotic sensitivity, each	51	45
81002	Urinalysis nonauto w/o scope	52	19
84439	Assay, free thyroxine	53	61
80003	3 clinical chemistry tests	54	44
82108	Assay, aluminum	55	106
84132	Assay serum potassium	56	38
85021	Automated hemogram	57	41
84479	Assay triiodothyronine (T-3)	58	49
85730	Thromboplastin time, partial	59	48
88173	Interpretation of smear	60	133
80058	Hepatic function panel	61	64
85102	Bone marrow biopsy	62	157
P9605	Routine venipuncture	63	30
85095	Bone marrow aspiration	64	146
84066	Assay prostate phosphatase	65	81
88180	Cell marker study	66	98
84165	Assay serum proteins	67	88
80005	5 clinical chemistry tests	68	70
82977	Assay of GGT	69	62
82948	Reagent strip/blood glucose	70	34
84478	Assay triglycerides	71	58

(continued)

Table 2-20. Rankings of Procedures by Allowed Charges and by Volume, 1994 (continued)

HCPCS	Procedure Name	Ranking by Allowed Charges	Ranking by Volume
80156	Assay carbamazepine	72	99
85022	Automated hemogram	73	60
80050	General health panel	74	141
85097	Bone marrow interpretation	75	134
86422	Radioallergosorbent tests	76	77
80008	8 clinical chemistry tests	77	83
86291	Hepatitis BS antibody test	78	92
88108	Cytopathology	79	113
80012	12 clinical chemistry tests	80	86
82150	Assay of amylase	81	74
85595	Platelet count, automated	82	59
86235	Nuclear antigen antibody	83	112
P3000	Screen pap by tech w MD supv	84	43
83719	Blood lipoprotein assay	85	96
82784	Assay gammaglobulin IgM	86	93
84403	Assay total testosterone	87	145
86038	Antinuclear antibodies	88	109
86255	Fluorescent antibody; screen	89	108
85031	Manual hemogram, complete	90	84
85007	Differential WBC count	91	55
82465	Assay serum cholesterol	92	66
87163	Special microbiology culture	93	107
85030	Automated hemogram	94	63
86592	Blood serology, qualitative	95	56
86302	Hepatitis C antibody	96	118
80009	9 clinical chemistry tests	97	100
84466	Transferrin	98	115
84520	Assay urea nitrogen	99	69
84134	Prealbumin	100	126
	Procedures in Top 100 in Volume, But Not in Allowed Charges		
85045	Reticulocyte count	105	79
88150	Cytopathology, pap smear	107	65
87205	Smear, stain & interpret	108	82
85018	Hemoglobin	109	53
81003	Urinalysis, auto, w/o scope	110	52

(continued)

Table 2-20. Rankings of Procedures by Allowed Charges and by Volume, 1994 (continued)

HCPCS	Procedure Name	Ranking by Allowed Charges	Ranking by Volume
86430	Rheumatoid factor test	111	94
82550	Assay CK (CPK)	112	97
84460	Alanine amino (ALT) (SGPT)	113	91
88156	TBS smear (Bethesda system)	119	75
82565	Assay creatinine	120	90
85044	Reticulocyte count	123	89
82962	Glucose blood test	125	78
36415	Routine venipuncture for collection of specimen	129	32
85014	Hematocrit	130	68
81015	Microscopic exam of urine	134	85
81005	Urinalysis	169	87

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1994 Physician/Supplier Procedure Summary File.

Weights for the purpose of calculating a single composite bid for a lab should be based on volume.

In contrast, weights for the purpose of calculating a single composite bid for a lab should be based on volume. The composite bid allows an evaluator to compare each bidder's cost for performing the entire bundle of demonstration tests. Thus, the composite bid is calculated by multiplying the price (bid) by the expected volume for each procedure and then summing across procedures. Equivalently, the price (bid) for each procedure can be multiplied by a weight based on the relative expected volume of the procedure; this product would then be summed across procedures.

Demonstration Tests

Based on a review of 1994 national and Tennessee data, CIGNA and RTI selected a list of 105 procedures to be included in the lab demonstration project (Table 2-21). This list will be reviewed by the LTAC.

To develop this list, we first identified common and/or automated lab procedures. Procedures were defined to be common if they met the following criteria:

Table 2-21. Preliminary List of Demonstration Tests
CIGNA and RTI selected a list of 105 procedures to be included in the lab demonstration project. This list will be reviewed by the LTAC.

Procedure Code	Description
80019-G0058	20 clinical chemistry tests
80019-G0059	21 clinical chemistry tests
80019-G0060	22 clinical chemistry tests
G0001	Drawing blood for specimen
P9604	One-way allow prorated trip
P9605	Routine venipuncture
80002	1-2 clinical chemistry tests
80003	3 clinical chemistry tests
80004	4 clinical chemistry tests
80005	5 clinical chemistry tests
80006	6 clinical chemistry tests
80007	7 clinical chemistry tests
80008	8 clinical chemistry tests
80009	9 clinical chemistry tests
80010	10 clinical chemistry tests
80012	12 clinical chemistry tests
80016	13-16 clinical chemistry tests
80018	17-18 clinical chemistry tests
80019	19 clinical chemistry tests
80050	General health panel
80058	Hepatic function panel
80061	Lipid panel
80091	Thyroid panel
80092	Thyroid panel with tsh
80162	Assay for digoxin
80185	Assay for phenytoin
80198	Assay for theophylline
81000	Urinalysis with microscopy
81002	Urinalysis, nonautomated, without scope
81003	Urinalysis, automated, without scope
81005	Urinalysis
81015	Microscopic exam of urine
82150	Amylase
82172	Apolipoprotein
82250	Bilirubin-Total or direct
82270	Test feces for blood

(continued)

Table 2-21. Preliminary List of Demonstration Tests (continued)

Procedure Code	Description
82310	Assay calcium
82330	Assay calcium-ionized
82378	Carcinoembryonic antigen
82465	Assay serum cholesterol
82540	Assay creatine
82550	Assay ck (cpk)
82565	Assay creatinine
82570	Creatinine: other source
82607	Vitamin B-12
82728	Assay ferritin
82746	Blood folic acid serum
82784	Assay gammaglobulin igm
82947	Assay quantitative, glucose
82948	Reagent strip/blood glucose
82962	Glucose blood test
82977	Glutamuyltransferase, gamma
82985	Glycated protein
83036	Glycated hemoglobin test
83520	Immunoassay, ria
83540	Assay iron
83550	Iron binding test
83615	Lactic dehydrogenase
83690	Lipase
83718	Blood lipoprotein assay-HDL
83721	Blood lipoprotein assay-LDL
83735	Assay magnesium
83970	Assay of parathormone
84066	Assay acid phosphatase
84075	Phosphatase, alkaline
84100	Assay phosphorus
84132	Assay serum potassium
84153	Prostate specific antigen
84155	Protein total
84165	Assay serum proteins
84295	Assay serum sodium
84436	Assay, total thyroxine

(continued)

Table 2-21. Preliminary List of Demonstration Tests (continued)

Procedure Code	Description
84439	Assay, free thyroxine
84443	Assay thyroid stim hormone
84450	Transferase (ast)
84460	Alanine amino (alt)
84466	Transferrin
84478	Assay triglycerides
84479	Assay triodothyronine (t-3)
84520	Assay urea nitrogen
84550	Assay blood uric acid
85007	Differential wbc count
85013	Hematocrit-Spun
85014	Hematocrit-Other then spun
85018	Hemoglobin
85021	Automated hemogram
85022	Automated hemogram
85023	Automated hemogram
85024	Automated hemogram
85025	Automated hemogram
85027	Automated hemogram
85029	Automated hemogram
85030	Automated hemogram
85031	Manual hemogram, complete CBC
85044	Reticulocyte count
85048	White blood cell (wbc) count
85610	Prothrombin time
85651	RBC sedimentation rate
85730	Thromboplastin time, partial
86255	Florescent antibody screen, each antibody
86287	Hepatitis B surface antigen (HBsAg)
86291	Hepatitis B surface antibody (HBsAb)
86316	Immunoassay, tumor antigen
86430	Rheumatoid factor test
86592	Blood serology, qualitative

- High allowed charges.
- Close substitutes for or components of procedures with high allowed charges (e.g., if 19 clinical chemistry tests have high allowed charges, 18 clinical chemistry tests would also be defined as common, as would each of the 19 individual clinical chemistry tests).
- Automated tests not requiring pretreatment that historically have been done in large numbers in independent labs and/or POLs.
- Automated tests requiring pretreatment that have historically been done in large numbers in POLs.

In 1994, demonstration tests accounted for
- 83 percent of allowed charges nationwide
- 88 percent of lab volume nationwide
- 70 percent of lab allowed charges for every carrier
- 81 to 93 percent of volume for every carrier

After identifying common procedures, we reviewed each procedure individually and excluded tests where quality is most likely to be a concern. We excluded the following types of procedures:

- Procedures requiring detailed interpretation, such as pap smears and anatomic pathology.
- Microbiology tests.
- Procedures historically considered "esoteric" and not performed in POLs.
- Automated procedures that are not commonly and widely performed, such as therapeutic drug assays (except for digoxin and theophylline).

Table 2-22 shows the share of total lab allowed charges and volume accounted for by the group of demonstration tests in each carrier jurisdiction in 1994. Nationwide, the demonstration tests accounted for 83 percent of lab allowed charges and 88 percent of total lab volume. Demonstration tests accounted for at least 70 percent of allowed charges in every carrier jurisdiction and topped 80 percent in all but six jurisdictions. Demonstration test volume ranged from 81 to 93 percent.

The same set of demonstration tests could be used, perhaps with slight state-by-state modification, no matter where the demonstration is located.

Table 2-22 has important implications for the lab demonstration. Taken as a group, our list of demonstration procedures accounted for the vast majority of lab allowed charges and volume in every carrier jurisdiction, with relatively little variation in the shares across states. Consequently, the same set of demonstration tests could be used, perhaps with slight state-by-state modification, no matter where the demonstration is located.

Table 2-22. 1994 Percent of Demonstration Tests to All Procedures
Demonstration tests accounted for more than 70 percent of allowed charges for every carrier.

Carrier No.	State	Carrier	Allowed Charges	Volume
00510	Alabama	Blue Shield	85	90
00520	Arkansas	Blue Shield	88	92
00528	Arkansas/Louisiana	Blue Shield	84	90
00542	California	Blue Shield	83	86
00550	Colorado	Blue Shield	85	89
00570	Delaware	Blue Shield	86	88
00580	District of Columbia	Blue Shield	84	87
00590	Florida	Blue Shield	76	85
00621	Illinois	Blue Shield	83	88
00630	Indiana	Blue Shield	83	89
00640	Iowa	Blue Shield	88	92
00650	Kansas	Blue Shield	88	91
00655	Kansas/Nebraska	Blue Shield	87	91
00660	Kentucky	Blue Shield	87	90
00690	Maryland	Blue Shield	72	81
00700	Massachusetts	Blue Shield	81	87
00710	Michigan	Blue Shield	82	88
00720	Minnesota	Blue Shield	89	93
00740	Kansas City	Blue Shield	84	90
00751	Montana	Blue Shield	89	91
00780	New Hampshire/ Vermont	Blue Shield	82	88
00801	Buffalo	Blue Shield	82	86
00803	Empire	Blue Shield	84	89
00820	North Dakota	Blue Shield	86	90
00825	North Dakota/Wyoming	Blue Shield	86	87
00860	Pennsylvania/New Jersey	Blue Shield	81	84
00865	Pennsylvania	Blue Shield	84	88
00870	Rhode Island	Blue Shield	84	90
00880	South Carolina	Blue Shield	86	92

(continued)

Table 2-22. 1994 Percent of Demonstration Tests to All Procedures (continued)

Carrier No.	State	Carrier	Allowed Charges	Volume
00900	Texas	Blue Shield	85	89
00910	Utah	Blue Shield	82	88
00951	Wisconsin	Wisconsin Physicians Service	86	91
00973	Puerto Rico	Blue Shield	82	86
01020	Alaska	Aetna	83	89
01030	Arizona	Aetna	84	88
01040	Georgia	Aetna	86	90
01120	Hawaii	Aetna	83	86
01290	Nevada	Aetna	82	87
01360	New Mexico	Aetna	82	88
01370	Oklahoma	Aetna	78	88
01380	Oregon	Aetna	84	89
01390	Washington	Aetna	83	88
02050	California	Occidental	79	84
05130	Idaho	CIGNA	87	91
05440	Tennessee	CIGNA	84	91
05535	North Carolina	CIGNA	86	88
10071	RRB	Travelers	85	88
10230	Connecticut	Travelers	83	87
10240	Minnesota	Travelers	70	83
10250	Mississippi	Travelers	85	89
10490	Virginia	Travelers	87	92
11260	Missouri	General American	85	88
14330	New York	Group Health Inc.	86	91
16360	Ohio	Nationwide	79	87
16510	West Virginia	Nationwide	82	90
21200	Maine	Blue Shield	81	87
	All Carriers		83	88

Note: File contains Medicare Part B information on independent, physician office, and "other" labs, but not on hospital outpatient labs.

Source: 1994 Physician/Supplier Procedure Summary File.

2.4 ANTITRUST AND OFFICE OF INSPECTOR GENERAL ACTIONS

Antitrust

Indirectly, the absence of public releases by the FTC may indicate that the agency has not been overly concerned with growing concentration in the industry.

As mentioned above, the clinical laboratory industry has undergone several major mergers during the last few years. The Department of Justice (DOJ) and the Federal Trade Commission (FTC) share responsibilities for ensuring that mergers do not violate federal antitrust laws. Contacts at the DOJ indicate that the FTC has taken the primary oversight role on recent mergers in the clinical laboratory industry. However, the FTC has not commented publicly on recent lab mergers. The antitrust agencies review confidential information when companies merge; typically, their findings are only released if the agency decides to challenge the merger. Indirectly, the absence of public releases by the FTC may indicate that the agency has not been overly concerned with growing concentration in the industry.

Although neither the DOJ nor the FTC has commented on recent merger activity in the clinical laboratory industry, a partial understanding of their views on the industry can be inferred from a Department of Justice business review letter approving the formation of the Preferred Laboratory Access Network (PLAN) in California (Bingaman, 1995). PLAN is a network of 17 small- to medium-sized clinical laboratories that was formed to permit the labs to bid on contracts with MCOs that require regional or statewide coverage. "Small" labs were defined as having revenues less than $20 million, and medium-sized labs were defined as having revenues between $20 and $100 million (Laboratory Industry Report, 1995). Lab sizes were based on California revenue, allowing PLAN members Corning Nichols and National Health Labs to qualify as medium-sized labs.

In approving PLAN, the DOJ concluded that "PLAN's proposed activities are unlikely to have anticompetitive effects in any reasonably drawn market, and may in fact be procompetitive," by increasing the number of large independent laboratories that can serve regional or statewide MCOs from three to four (Bingaman, 1995; Department of Justice Press Release, 1995). The DOJ relied largely on its market analysis to determine whether PLAN had sufficient market power to significantly raise prices, the DOJ's trigger for opposing formation of the network.

The Department of Justice business review's market analysis distinguished between three general types of laboratory tests:

- stat tests, requiring very quick turnaround based on the need to detect infection, make a quick diagnosis, and begin immediate medication;
- routine tests, which are generally uncomplicated, widely used but not particularly time-sensitive screenings; and
- esoteric or "exotic" tests, which require more time or diagnostic skill.

The Department of Justice business review concluded that each of these types of tests represents a distinct economic market.

The Department of Justice business review also distinguished between the three major providers of lab services:

- POLs,
- hospital labs, and
- independent labs.

Purchasers of lab tests told the DOJ that they did not view POLs as potential substitutes for the other types of labs for stat and routine tests because POLs charge higher prices. Therefore, the DOJ concluded that POLs do not impose price constraints on clinical or hospital labs for the business of price-sensitive MCOs.

The DOJ went on to loosely define the following geographic markets for the three types of tests:

- Stat tests tend to be local in nature, generally within 30 minutes of the site where the test is drawn. Competitors for stat tests include hospital labs and independent labs located within a 30-minute range.
- Markets for routine tests are typically local in nature, but somewhat larger than for stat tests. According to the DOJ, hospital labs and independent clinical labs can be viewed as servicing significantly overlapping segments of the routine testing market. The DOJ accepted PLAN's market analysis of lab share by county, implying, but not explicitly stating, that county jurisdictions proximate local markets (it should be noted that California has some of the largest and most populous counties in the nation). The DOJ also noted that existing labs can easily enter new markets because the marginal costs of adding drawing stations or courier pickups is relatively low.

- The geographic market for esoteric tests is much broader. Labs face significant competition for esoteric tests from other labs both in the state and nationwide.

Swayed by evidence that PLAN members accounted for less than 10 percent of lab sales in most counties, based on specimen origin, the DOJ ruled that PLAN activities were unlikely to have anticompetitive effects in any reasonably drawn market for the three types of services. The DOJ was further reassured by PLAN's commitment to limiting its market share to no more than 30 percent of the sales volume in any given market.

The DOJ is sensitive to the need for small- and medium-sized labs to form networks to compete for contracts with MCOs and other payers. In this case, the network was viewed as potentially procompetitive.

Based on the Department of Justice business review letter (Bingaman, 1995), we can make several tentative observations about the decision's implications for the demonstration project:

- The DOJ is sensitive to the need for small- and medium-sized labs to form networks to compete for contracts with MCOs and other payers. In this case, the network was viewed as potentially procompetitive. The DOJ might take a similar view of networks formed to bid in the demonstration project.
- The DOJ did not categorically deny the validity of defining county-wide markets for stat and routine tests, nor did it object to the principle that the network could have up to a 30 percent share in a local market without gaining market power. Similar figures might apply to the demonstration.
- The DOJ considers stat, routine, and esoteric tests to represent different economic markets. This distinction might warrant separate reimbursement levels for the different kinds of tests.
- The DOJ does not consider POLs to be serious competitors to hospital and independent labs. Concerns about competition might therefore focus on the latter groups.

As mentioned, however, these observations are only tentative. The PLAN Business Review does not serve as a legal precedent for approval of future lab networks. While not throwing out the county-based definition of local markets, the DOJ did not formally define what the appropriate local market is, nor did it specify how much more than 30 percent market share a lab must achieve before it gains significant market power. Recent mergers in the industry certainly gave some labs more than 30 percent market share in some markets.

Both the DOJ and the FTC have approved recent efforts by smaller labs to form lab networks to compete for regional or statewide lab contracts.

One of the ways in which the FTC has commented on the clinical lab industry was through an advisory letter pertaining to Mayo Medical Laboratories' plan to establish a statewide laboratory network in Michigan and a regional laboratory network in the San Francisco Bay Area. Both networks will involve local hospitals. The hospitals will provide basic and second-level tests, while Mayo will perform esoteric tests. On July 19, 1996, the FTC publicly released a letter in which it stated that it will not recommend that the Commission challenge Mayo's plan because the plan does not appear to hinder competition (Leibenluft, 1996).

To perform its analysis, the FTC used its general antitrust procedure as described in the Department of Justice/Federal Trade Commission Statements of Analytical Principles Relating to Multiprovider Networks. When fixed prices are established, they are judged under the rule of reason; that is, fixed prices are allowed when they are judged "reasonably necessary to achieve the pro competitive benefits of a joint venture involving significant economic integration among competitors" (Leibenluft, 1996). According to Mayo, the majority of contracts will be subject to risk sharing. In the advisory letter, the FTC stated that the proposed clinical lab networks would enable its members to share financial risk that would otherwise limit their participation in the market.

In the letter, the FTC stated that the other services—discounted fee-for-services—are also handled in an acceptable manner. An independent agent will survey the network participants, develop a price scale, present the price scale to the potential customer, and then allow a participant to reject or accept the potential customer's bid. The FTC stated that they believed this procedure to be acceptable because it does not allow for discussion of prices among members. Although this procedure will allow for some price setting, the FTC stated that they found this "price fixing" to be under the rule of reason and necessary to take advantage of economics efficiencies.

Also in the letter, the FTC stated that not enough information was given in order to determine the definition of the relevant market; however, the FTC could say that the information on the two networks led them to believe that there would not be an adverse effect on competition in either market. For both networks, commercial firms offering a wide range of services will provide significant competition.

The FTC also stated that the networks would not adversely affect competition among the participants themselves because local hospitals rarely compete with each other. The FTC stated that the networks may even have procompetitive effects, enabling purchasers to choose from a wider variety of options.

Office of the Inspector General

The Office of the Inspector General (OIG) has expressed a number of concerns about laboratory billing practices in the past. In January 1990, OIG issued the report "Changes Are Needed In the Way Medicare Pays For Clinical Laboratory Tests." In the report, they discussed their findings about billing practices in the clinical laboratory industry and made a number of recommendations to HCFA. From March 1993 to September 1995, OIG gathered information and performed additional analysis on the clinical lab industry to determine if the industry had changed since their 1990 report. They reported these results in January 1996 in "Follow-Up Report to 'Changes Are Needed In the Way Medicare Pays For Clinical Laboratory Tests'." Below we discuss each of these reports in more detail.

The main findings of the January 1990 report, "Changes are Needed in the Way Medicare Pays For Clinical Laboratory Tests," are as follows:

- Medicare paid approximately 90 percent more than physicians paid for common, high-volume tests.
- Profiles had even higher Medicare prices (on average, 176 percent higher than physician fees) and did not offer physicians a reduced rate over individual tests. Medicare did not have a procedure in place to ensure that Medicare received price benefits when profiles were ordered.
- Labs often offered physicians discounted prices that made the price differential between physicians and Medicare even larger. Labs claimed that Medicare claims were more expensive to process due to inefficiencies in the system.
- Medicare provided labs with a large volume of tests and therefore should receive lower prices.

OIG's recommendations for HCFA in their 1990 report are as follows:

- HCFA should seek legislation to lower Medicare fee schedules in a manner that makes them consistent with the fees physicians are being charged.

- HCFA should develop procedures to ensure that Medicare benefits from reduced costs when profiles are ordered.
- HCFA should assist carriers in developing a more efficient claims process.

Since the 1990 report, Congress has passed a series of reductions in the Medicare fee schedules. HCFA has standardized current procedural terminology panel codes. HCFA has also taken steps to streamline lab claims processing.

OIG has long been concerned about dual pricing practices in the lab industry. Its latest report concluded that dual pricing persists, but provided little documentation of the practice.

OIG's 1996 "Follow-Up Report to 'Changes are Needed in the Way Medicare Pays for Clinical Laboratory Tests'" addressed the extent to which their 1990 recommendations had been followed. The first issue that OIG investigated was dual pricing, the practice by which Medicare fees were significantly higher than the fees independent physicians were charged in 1990. In their analysis, OIG found the following:

- The Medicare fee schedule is still above the prices physicians pay; however, the price differential has decreased.
- Once the 1993 Omnibus Budget Reconciliation (OBRA) legislation is fully implemented, the price ceiling on Medicare fees will fall to 76 percent of the median of the carrier's prices. Although the General Accounting Office (GAO) found this limit to be sufficient to eliminate the price differential between Medicare and other payers, it does not get rid of the problem of too many tests being ordered.
- OIG's sanction authority in section 1128(b)(6) of the Social Security Act is not the proper mechanism to use to combat the problem of dual pricing, as HCFA suggested. Instead, HCFA should examine the underlying causes.

OIG's 1996 recommendation to HCFA on the issue of dual pricing was that HCFA needs to check the Medicare fee schedule on a regular basis to make sure it is consistent with prices physicians pay.

OIG also investigated the bundling issue. OIG found that:

- Current legislation on the fees allowed for panels of tests is inadequate to protect Medicare from being overcharged. Although HCFA requested information from carriers, the carriers did not fully comply and HCFA did not adequately follow up on the request.
- Overcharging of panels is even more of a problem because carriers are misleading physicians into ordering panels instead of independent tests by advertising that tests are included "at no additional charge." Medicare was often billed extra for these tests.

- Test volume has increased since 1990, and one reason could be that panels of tests are being used instead of independent tests. Therefore, labs are using panels to increase their volume.
- It is difficult to control the ordering of panels because physicians are not informed of how Medicare is billed, and Medicare patients have no incentive to change the practice because they are not responsible for a deductible or a copayment.
- To deal with the issue of bundling tests, HCFA has established a unit that is specifically assigned to investigate Medicare fraud and has developed panel code definitions. However, HCFA does not require that carriers use the codes.

To address the unbundling issue, OIG stood behind its 1990 report recommendation that HCFA should develop a procedure to ensure that Medicare is receiving benefits from ordering panels rather than independent tests. In addition to the original recommendation, OIG recommended that HCFA should

- develop legislation that will ensure that the fee charged for tests that are included in a panel is less than the fee of individual ordered tests;
- investigate the possibility of reinstating coinsurance and deductibles into the Medicare payment system; and
- require carriers to analyze their billing and utilization numbers for abnormalities.

The next issue OIG addressed in its 1996 follow-up report is the streamlining of claims processing. OIG found the following:

- Electronic processing and improved communication between carriers and independent clinical laboratories has helped to make the process more efficient.
- Carriers must have electronic capability to handle claims, and "clean" bills must be paid by electronic fund transfer 14 to 30 days after receipt. This procedure should reduce the extra costs that labs claimed were associated with Medicare claims in 1990.

As a result, OIG stated that they believed the streamlining issue had been dealt with appropriately, and that they did not have any additional recommendations.

The latest OIG report's finding that dual pricing practices continue in the industry potentially has important implications for the demonstration project because the finding suggests that Medicare could use competitive bidding to reduce the price differential between its and other payers' prices. However, the OIG report does not document the current magnitude of the price differential, except to say that the differential has decreased in recent years. The report also does not explicitly consider lab fees paid by MCOs. Several members of the LTAC indicated that MCOs, not physicians, reap most of the current benefits of dual pricing. Finally, labs have long argued that the price differentials OIG cites as evidence of dual pricing actually represent true cost differences.

In addition to these reports, OIG has issued a number of subpoenas to investigate laboratory billing practices:

- In November 1990, OIG assisted with a grand jury inquiry of National Health Laboratories (NHL) and its pricing practices.
- On December 18, 1992, NHL entered into an agreement settlement on allegations that their basic test profile included unnecessary extra tests. This practice did not give physicians an alternative to order only a few specific tests. As part of the agreement, NHL paid a $1 million fine for submitting false claims and agreed to pay $100 million to the Federal Government in installments to settle pending and threatened civil claims.
- In August 1993, OIG performed a nationwide audit on pricing and billing practices. The clinical labs subpoenaed for information included Corning/MetPath, Roche Biomedical Labs, and Allied Clinical Labs.
- In September 1993, OIG agreed to let both Corning/MetPath and Unilab enter into a settlement agreement. The alleged charges that led to the agreement were that the companies had not properly informed physicians about higher prices for Medicare tests, and wrongfully led physicians to order tests for Medicare patients that they believed were lower priced.
- In April 1994, OIG sent a subpoena to Allied Clinical Laboratories to request information on its Cincinnati, Ohio, office's pricing practices of certain cancer screening tests.
- In May 1994, OIG sent a subpoena to Corning/MetPath requesting information pertaining to billing for tests that were not performed or reported.
- In August 1995, OIG subpoenaed Corning/MetPath for documents related to 14 current procedural terminology (CPT) codes used to bill for certain hematology tests.
- In December 1995, Corning/MetPath received a subpoena from OIG requesting information on the policies regarding specimens received that did not contain specific test requisitions.

Investigations related to most of the subpoenas have recently been completed, as described below. LTAC members knowledgeable about large independent labs believe that the investigations have caused labs to re-evaluate their billing practices and modify practices that OIG might find questionable.

In recent years, OIG, in conjunction with HCFA, the Department of Justice, and several other law enforcement agencies have begun a campaign to eliminate fraud and abuse practices used against Medicare, Medicaid and other Federal health and human services. As a result of this campaign, in the past 2 years there have been several large fraud settlements in the clinical lab industry. These settlements include the following:

- March 20, 1995: Allied Clinical Labs agreed to pay $4.9 million in settlement claims against charges that Allied submitted false diagnosis codes in many Medicare billings (Arent Fox, 1995).
- October 9, 1996: Damon Clinical Laboratories, a subsidiary of Corning, agreed to pay $119 million in criminal and civil fines and pleaded guilty to charges of submitting unnecessary blood tests. This fraudulent practice occurred before Damon was bought by Corning Clinical Laboratories in 1993 (News & Reports, 1996).
- November 21, 1996: Laboratory Corporation of America Holdings (LabCorp) agreed to pay a total of $187 million in settlement fees, $182 million of which was settlement for allegations that LabCorp submitted false claims for medically unnecessary laboratory tests. Five million dollars of the fee was a criminal fine for Allied Clinical Laboratories, a subsidiary of LapCorp (DHHS, 1996a).
- December 18, 1996: Spectra Laboratories, Inc., agreed to pay $10.1 million to settle several civil claims, including fragmenting billing and billing for medically unnecessary tests (DHHS, 1996b).
- February 12, 1997: Meris Laboratories, Inc., agreed to pay $5.2 million to settle claims of fraud, including billing laboratory tests improperly and adding nonexistent indices in complete blood count tests (Reuters Limited, 1997).
- February 26, 1997: SmithKline Beecham Clinical Laboratories, Inc., agreed to pay $325 million to settle claims of fraud and abuse including unbundling clinical laboratory tests, billing for tests not performed, inserting false diagnosis codes to obtain reimbursement, paying kickbacks to physicians for patient referrals, double-billing, and billing for calculations that were both unordered and unnecessary (DHHS, 1997).

In addition to the settlements with the independent laboratories, the U.S. Justice Department has also investigated several Ohio hospitals to recover Medicare and Medicaid overpayments. To date, the total recovery from northern Ohio hospitals is $6.3 million, but the U.S. Justice Department estimates that the total could rise to $15 million by the time the investigation is over (National Intelligence Report, 1996).

2.5 FINANCIAL PERFORMANCE AND FEE TRENDS

Recent Financial Performance

The clinical laboratory business has undergone a number of changes in the past 5 years. The $30 billion a year industry has undergone changes in regulations and reimbursement trends, and has been under continued pressure from HMOs and Medicare to lower prices (Schroder Wertheim & Co, 1996).

Basically, clinical laboratories are struggling.

We discuss below the financial performance of the top five clinical laboratories: Laboratory Corporation of America (LabCorp), Corning/MetPath, SmithKline Beecham, Unilab Corporation, and Physicians Clinical Laboratory. Basically, clinical laboratories are struggling:

- LabCorp reported net losses of $12.3 million in 1995, and $14.2 million in the second quarter of 1996.
- Corning is spinning off its clinical laboratory division in order to improve its financial condition.
- SmithKline Beecham's clinical lab division reported declining sales and operating margins.
- Unilab reported a net loss of $39 million in 1995.
- Physicians Clinical Laboratory reported a net loss of $79.2 million (some but not all in extraordinary items) in its most recent fiscal year and has a current negative shareholder equity position of $64.6 million.

Each of these five companies is discussed in more detail below.

LabCorp is the leader of the clinical lab industry with $1,693 million in annual revenues and $30 million in net income in 1995. It comprises 21 percent of the independent lab market share. LabCorp was formed by the merger of National Health Laboratories (NHL) and Roche Biomedical Laboratories, Inc. (RBL) in 1995 (Rice, 1995). As stated in their 1995 annual report, the cost savings from the synergy between the companies have not been as high as they had expected. LabCorp reported a net loss of $12.3 million in 1995. Two of the major setbacks were a $13.5 million write-off of deferred financing costs and a pre-tax special charge of $10 million related to settling various pending claims (1995 LabCorp Annual Report). LabCorp reported a $14.2 million loss in the second quarter of 1996 and responded with a number of measures, including wage and hiring deferrals, targeted price increases, and selective repricing or removal of existing business not meeting company requirements. Among the factors in the losses were continued price erosion and lower utilization attributed to managed care, as well as Medicare cuts in reimbursement (responsible for a 1.5 percent decrease in net sales), and bad weather (Laboratory Corporation of America, 1996).

Corning's independent laboratory division, Corning Clinical Laboratories, is the second-largest clinical laboratory with $1,670 million in annual revenues and approximately 21 percent of the market share. Corning recently announced its plan to spin off both the pharmaceutical and clinical lab sectors in order to strengthen its financial position. The new clinical lab company's share price is expected to be relatively low because it was not doing well financially and Corning is pushing off $500 million of debt onto the division before it spins it off (Prudential Securities, 1996). One of the financial setbacks of the laboratory unit was the $8.6 million settlement it had to pay to the federal government for false claim allegations (Rice, 1995).

The third largest clinical laboratory is SmithKline Beecham with $1,225 million in annual revenues and 15 percent of the market share. SmithKline Beecham, a British-owned company, is doing well financially as a whole; however, its clinical lab division is struggling, bringing in less than 5 percent of total company profits. In 1995, due to pressure in the industry, lab sales declined 2 percent and operating profit declined 21 percent. However, according to a recent financial analysis by Schroder Wertheim & Co., there is hope that SmithKline Beecham's financial position will improve with the administration planning to add further automation of the billing process and reduce total cost per test (Schroder Wertheim & Co., Inc., 1996).

Unilab Corporation is the fourth-largest clinical lab with $189 million in annual revenues and 2 percent of the market share in 1995. The corporation is gaining market share in California, but operating expenses are still high. Although revenues increased by over $30 million in the past year, operating income only increased by $1 million due to increased expenses. Unilab reported a net loss in 1995 of $39 million, mostly due to a $36.5 million loss on sales of equity investment (Brean Murray, 1996). The financial future does not look promising, with a reported net loss of $8 million in the first 6 months of 1996 (Unilab Corporation, 1996).

Physicians Clinical Laboratory reported an annual revenue of $115 million and approximately 2 percent of the market share in the fiscal year ending in 1995. Revenue fell to $90 million in the fiscal year ending in February 1996, and the company suffered a net loss of $79.2 million as a result of severe cash flow problems, downward pressure on reimbursement revenues, billing system process challenges, and accounts receivable collection problems (Physicians Clinical Laboratories, 1996). The loss included $25.4 million in write-off of uncollected accounts receivable, $4.9 million in credit restructuring costs, and a $25.0 million write down of intangible assets, but the company also incurred losses on its operating income. The company has been in default of interest payments since September 1995, has a negative shareholder equity position of $64.6 million, and was recently removed from the Nasdaq National Market. As stated in the company's 10-Q Quarterly Report, there is some concern about the future of Physicians Clinical Laboratory. Approximately two-thirds of revenues are received from third-party payers and with declining reimbursement rates, cash flow will continue to be a problem (Physicians Clinical Laboratory, 1996).

Smaller lab companies have not fared much better. Universal Standard Medical Laboratories experienced a $3.0 million loss in the first 6 months of 1996, and its net revenues fell by nearly $4.0 million from the previous period (Universal Standard Medical Laboratories, 1996). LabOne earned $1.8 million in income the first 6 months of 1996, down from $3.4 during a similar period in 1995, and revenues fell from $29.3 million to $28.0 million (LabOne, Inc., 1996). Meris Laboratories reported a $4.8 million operating loss in the first 6 months of 1996, as net revenues fell from $22 million in the similar period in 1995 to $19 million (Meris Laboratories, Inc., 1996).

In summary, the clinical laboratory market as a whole is struggling financially. Declining prices and changing regulatory conditions have driven profits down. Even the largest of the clinical labs, LabCorp, reported a net loss of $12.3 million in 1995. The other top four labs are in similar financial condition. It appears that the financial troubles will persist, at least in the short-term, because most of the labs stated concern about their financial future in their annual report.

Fees

Nearly all of the companies' annual reports cite declining reimbursement levels and changes in payer mix as major factors in their recent financial woes. Both Medicare and managed care prices have been falling significantly, according to these reports, and revenues have fallen further as patients move from the fee-for-service sector into managed care.

Published data on fees by payers is difficult to obtain. Many labs offer substantial discounts to certain customers; these discounts are usually considered to be confidential information between the two parties. The little information that has been published is often fragmentary. For example, a recent financial analysis of Rice (1995) compares lab fees across payment sources for a routine automated test, but does not identify either the test or the data source (Table 2-23).

Table 2-23. Estimated Rates for a Routine Automated Test, by Payer Source
Fees for tests vary widely between payers, according to Rice, 1995.

Payer Source	Fee ($)
Patient/Direct Bill	45
Medicare	30
Doctor	15
HMO—Fee-for-Service	15 – 20
HMO—Capitated Rate	10

Source: Rice, 1995.

Despite its limitations, the table at least suggests that there are significant differences between payers. Perhaps more tellingly, it shows the potential effect on lab revenues of the movement towards managed care.

Despite the lower fees from managed care, labs see managed care as the inevitable wave of the future and have aggressively sought managed care contracts. The role of managed care is described in greater detail in Section 2.7.

2.6 LAB INDUSTRY TECHNOLOGICAL AND ECONOMIC TRENDS

Lab Cost Components

Lab costs may be divided into four components:

- Pre-analytic cost—the cost of drawing the specimen, transporting it to the lab, and getting the specimen into testable shape.
- Analytic cost—the reagent, labor, and capital costs of actually performing the tests.
- Post-analytic cost—the cost of reporting test results to physicians and receiving reimbursement.
- Quality assurance and quality control (QA/QC)—the costs of monitoring and maintaining test quality.

Specific components of costs appear to vary widely between lab sectors.

Specific components of costs appear to vary widely between lab sectors. For example, independent labs may have relatively high pre-analytic and post-analytic costs because they operate extensive courier networks and provide client physicians with computer access to test results. At the same time, they may have relatively low per-unit analytic and QA/QC costs because of the economies of scale they achieve from high test volumes. Conversely, POLs may have low pre- and post-analytic costs because they do not operate courier networks and they have convenient in-office access to test results. On the other hand, POLs generally have low volumes, resulting in high per-unit analytic and QA/QC costs.

Differences in the relative shares of key cost components complicate cost comparisons between labs in different sectors. In addition, LTAC members stress that focusing on a single cost component, such as analytic cost, may be misleading and may obscure overall trends in total laboratory costs.

Lab Cost

LTAC members are not aware of systematic published data on lab costs. Labs have proprietary information on costs, and many use costing software and/or subscribe to benchmarking systems. But LTAC members cautioned against direct comparisons of these data because of differences between

- lab sectors,
- labs within sectors, and
- benchmarking systems.

As mentioned above, key components of costs may differ between lab sectors. Even within a single lab sector, costs may differ substantially between labs. For example, three different labs might face three different prices for a particular reagent, depending on the volume of reagent and the amount of other equipment and supplies they purchase from the supplier. Similarly, one hospital may focus on outreach tests, while another focuses primarily on inpatient testing and consequently performs a higher percentage of high-cost stat tests. Finally, benchmarking systems differ in their allocation of overhead costs to individual tests, limiting comparisons across labs that use different systems.

On an impressionistic level, several respondents familiar with hospital labs said that hospital labs can compete with large independent labs' prices, but lag behind on information systems.

The lack of systematic, publicly available information on lab costs certainly complicates administrative efforts to adjust the current fee schedule.

The lack of systematic, publicly available information on lab costs certainly complicates administrative efforts to adjust the current fee schedule. HCFA could possibly overcome this complication by collecting its own data on test costs. Alternatively, HCFA could use competitive bidding to induce labs to reveal information about their costs as they bid.

Integrated Costs of Care

LTAC members also are not aware of many published studies evaluating the effects of changes in lab policy on related nonlab health costs.

Individual Lab Data

LTAC members generally were reticent to share proprietary cost information. Microbiology is an exception; one member indicated that microbiologists would participate in a survey of costs in their specialty. The member believes that Medicare currently underpays for microbiology tests, and that fact may affect the specialty's willingness to provide cost information. Another member made a cautious offer to share cost information for his lab, which primarily performs esoteric tests.

Perceived Cost Trends

Several LTAC members indicated that testing costs have fallen over time, but other members disagreed.

Several LTAC members indicated that testing costs have fallen over time ("They've had to, or I would be out of business," said one). Much of the cost reduction has occurred by reducing labor costs, through automating and/or substituting less-educated personnel. Automation has occurred to varying degrees in different specialties. Microbiology, for example, has had relatively little automation and remains fairly labor-intensive.

One member distinguished between direct production (analytic) costs and support costs. Direct production costs have remained at a relatively constant 30 percent of overall revenues over time at his independent lab. Given reductions in revenues per tests, production costs per test have had to fall to maintain the constant ratio. Support costs for couriers and drawing stations, for example, have increased as a percentage of revenues.

There was not universal consensus that costs have been falling, however. Several members suggested that costs have risen overall, despite automation. One of these respondents pointed to 1965 to 1975 as a period when technology produced major decreases in lab costs. Since 1975, technology's big effects have been on quality of results, with accuracy improving significantly, and on the introduction of new tests, according to this lab manager.

Profits

In contrast to their mixed feelings on costs, LTAC members were fairly universal in stating that profit margins have declined in recent years. These statements are consistent with the published data on lab financial performance discussed in Section 2.5.

Overpriced and Underpriced Procedures

We asked many of the LTAC members to identify tests where Medicare pays significantly more or significantly less than cost.

Members were generally unable or reluctant to identify overpriced tests, although one pointed to high-volume tests such as profiles, CBC, and chemistry tests, and another pointed to cortisol and aldolase tests.

Members were much more likely to identify tests as underpriced. Tests cited as underpaid include

- fasting blood sugar;
- house calls to draw blood from Medicare patients in the home ("We get paid $3 for those, and the best you can do is one per 30 minutes—we had to discontinue that service");
- prothombin time;
- flow cytometry;
- hepatitis tests;
- electrophoresis;
- Western blot;
- urine cultures;
- microbiology tests;
- tests that do not fit neatly into existing CPT codes; and
- recently introduced tests.

The indicated presence of both underpriced and overpriced procedures suggest that the relative prices included in the current Medicare fee schedule do not accurately reflect the relative costs of individual procedures. Consequently, competitive bidding might be used to set new relative fees for individual procedures that better reflect relative costs. Operationally, this requires bidders to submit bids for each of the individual procedures. In contrast, if the current fee schedule accurately reflected relative costs so that no procedures were relatively over or underpriced, competitive bidding would be much simpler: labs would submit a single bid or weighting factor that would be applied uniformly to the current fee schedule to set fees for individual procedures. For example, if a lab bid 0.91, it might receive 91 percent of the current fee for each procedure.

2.7 ROLE OF MANAGED CARE

Both our literature review and our interviews with LTAC members and other experts confirm that managed care is having a major impact on the clinical laboratory industry, as it has had on other health care sectors. One of the most noticeable effects has been on reimbursement. Not only are MCOs paying less than other payers (see Section 2.5), but they are frequently contracting with labs on a capitated, rather than a fee-for-service, basis. In the past, under fee-for-service, lab marketing focused on increasing test utilization. With capitated contracts, in contrast, labs have greater incentive to rationalize use of tests.

Not only are MCOs paying less than other payers, but they are frequently contracting with labs on a capitated, rather than a fee-for-service, basis.

Despite the lower reimbursement and capitated contracts offered by MCOs, labs have aggressively sought managed care contracts, frequently through competitively bid solicitations. In Chapter 5, we discuss MCO experience with competitive bidding in greater detail. In the remainder of this section, we present information on a number of other managed care issues raised by the LTAC.

Bidding on MCO Contracts

Smaller labs suggest that large labs have bid below costs on large MCO contracts in hopes of receiving profitable "pull-through" business from MCO physicians who also treat Medicare and non-MCO patients. On a related note, several members questioned whether labs could offer the same prices to Medicare that they offer to MCOs. According to these members, labs could not offer Medicare the same price because

- the size of the Medicare program dwarfs even the largest MCO, and
- pull-through is less profitable, once Medicare tests are removed.

Indeed, members suggested that the prices received by MCOs would eventually have to rise if Medicare adopted competitive bidding. This observation is consistent with an economic model of pull-through. Labs would only bid below cost for MCO business if they expected to pull through profitable Medicare business.

Pull-Through

Many observers believe that the pull-through has not materialized. In part, this is because physicians have less control over where they send tests than they previously had (most physicians belong to more than one MCO, and each may have its own preferred provider). In addition, as physicians become more accustomed to sending tests to more than one lab, pull-through becomes less likely. Some physicians may send MCO tests to the MCO lab, but continue to send non-MCO tests to the lab they had used previously.

Physicians Clinical Laboratories' 1996 Annual Report provides anecdotal evidence that some labs have bid below cost on contracts with MCOs. The report noted that, although the loss of a managed care contract reduced the lab's net revenue by $83,000 per month, the loss actually enhanced profit by $50,000 per month (Physicians Clinical Laboratories, 1996).

Tennessee Labs

Lab managers from Tennessee generally seemed less opposed to the concept of competitive bidding than the LTAC members were during the initial LTAC meeting. This may be because the Tennessee lab managers voluntarily contacted us. As one of these managers noted, however, Tennessee providers have grown accustomed to rapid change in their environment as a result of the implementation of TennCare, Tennessee's managed care program for Medicaid beneficiaries.

One lab manager in Tennessee expressed concern about competition with out-of-state labs. Tennessee has more stringent lab personnel requirements than other states, and the manager thought the costs of meeting these requirements would put Tennessee labs at a disadvantage relative to labs in nearby states.

Statewide Bidding

Smaller labs, including labs that are comfortable with the idea of competitive bidding, are very concerned about bidding competitions that require labs to provide statewide or even nationwide coverage. According to one independent lab manager, smaller labs are being "devastated" because MCO RFPs are generally written so that small labs cannot bid, due to requirements for statewide coverage. Small labs suggested that required geographic coverage areas should be much smaller than a state. This suggestion has important implications for the demonstration project. We will examine current lab coverage areas in Tennessee in Chapter 3.

Networks

In response to MCO requirements for statewide coverage, small independent and hospital labs are beginning to form lab networks. The purpose of the network is to provide a broader geographic coverage area and, in some cases, to reallocate test volume among labs to exploit economies of scale and achieve specialization that could not be accomplished within the individual labs. The best known of the networks is the Preferred Laboratory Access Network (PLAN), which includes 17 small- and mid-sized labs (including National Health Labs and Corning Nichols) in California; they recently received approval from the DOJ (Bingaman, 1995).

Many of the hospital lab representatives we interviewed are forming or are considering forming lab networks. In Tennessee, a number of not-for-profit hospitals report that they are gearing up to form a statewide network of hospital labs for the purpose of bidding on managed care contracts.

Other Issues

MCOs that strongly encourage or require participating physicians to use a designated lab are increasingly influencing a physician's choice of lab, according to LTAC respondents.

In areas with high managed care penetration, such as California and Arizona, the share of lab tests that a physician can directly bill to patients has dwindled dramatically. In Arizona, for example, the price of over 90 percent of lab tests is set prospectively by MCOs, Medicare, and Medicaid.

Information Systems

Managed care has also fueled a whole new push for labs to provide better information systems. To meet new National Committee for Quality Assurance (NCQA) standards for accreditation and complete the NCQA's Health Plan Employer Data and Information Set (HEDIS), MCOs must provide data on a number of dimensions of health care performance, including screening lab tests such as cholesterol tests and pap smears. MCOs are turning to labs to help provide this data, and laboratories in turn are scrambling to improve their data collection and management capabilities (Monahan, 1996).

3

Case Studies: The Local Market Environment in Tennessee and North Carolina

Chapter Outline

3.1 Tennessee
  3.1.1 High-Volume Test List
  3.1.2 Locational Analyses
  3.1.3 Market Shares
  3.1.4 The Memphis Market
  3.1.5 Medicare Part B Clinical Lab Test Trends
  3.1.6 Part B Clinical Lab Tests in Tennessee Hospitals
  3.1.7 Test Coverage by Lab Size and Type
3.2 North Carolina
  3.2.1 High-Volume Test List
  3.2.2 Locational Analyses
  3.2.3 Market Shares
  3.2.4 Medicare Part B Clinical Lab Test Trends
  3.2.5 Part B Clinical Lab Tests in North Carolina Hospitals

Although the analysis presented in Chapter 2 identified major changes in the clinical industry nationwide, there may be other factors affecting the clinical industry in more localized markets. Because the demonstration project will be limited to a state or regional area, we decided to perform in-depth case studies on the laboratory market in two states. Tennessee and North Carolina were selected for this analysis because CIGNA, in its role as Part B carrier for these states, has special access to Medicare lab data and a working knowledge of the market structure there. In addition, the two states initially appeared to be natural sites for the demonstration, due to CIGNA's participation in the project.

Focusing on state markets also allowed us to perform detailed analyses of individual lab claims that were not feasible at the national level. The data set for many of the analyses in this chapter is the 1994 Clinical Laboratory 100% Standard Analytic File (Lab SAF). Using this data set, we were able to perform analyses based on the location where the test specimen was drawn or where the beneficiary lived, thereby overcoming some of the limitations of analyses based on lab location or carrier claims processing that we discussed in Chapter 2.

Results for Tennessee are presented in Section 3.1, and results for North Carolina are presented in Section 3.2.

In Section 3.1.1, we use combined data from the Lab SAF (carrier data on independent labs and POLs) and Outpatient SAF (data on Part B tests performed by hospital outpatient labs) to compare the U.S. and Tennessee distributions of allowed charges for individual procedures. We show that the top procedures in Tennessee are similar to the top procedures nationwide. Tennessee's distribution of demonstration tests is also similar to the national distribution.

In Section 3.1.2, we perform a series of locational analyses of Tennessee claims to determine whether it makes a difference if "Tennessee" tests are defined on the basis of specimen drawing location, beneficiary residence, lab location, or processing Part B carrier. This definition has important implications for the design of the demonstration project. Also in the section, we examine how many and what type of labs are currently providing coverage for each of the 95 counties in Tennessee.

Our preferred basis for defining Tennessee tests is the location where the specimen is drawn. Using this definition, we calculated market shares for lab companies testing Tennessee specimens (Section 3.1.3). On this basis, the 4 largest and 5 of the top 10 labs in the state were independent labs. The Big Three lab companies (LabCorp, SmithKline Beecham, and Corning) had the leading market shares in the state. Hospital labs accounted for 5 of the top 10 labs in the state and the largest number of labs with over $100,000 in allowed charges.

In Section 3.1.4, we present market shares for the Memphis market. In Memphis, unlike the state as a whole, labs with the leading market share are affiliated with a large hospital and health care system.

Because of the volume of the claims data, we only analyzed the Tennessee and North Carolina Lab SAF data for 1994. Therefore, we use the Physician/Supplier Summary Files to analyze trends in the two states for 1992 through 1994. Results for Tennessee are presented in Section 3.1.5.

In Section 3.1.6, we analyze whether hospital outpatient labs were an important supplier of Medicare Part B lab tests in Tennessee. Although lab tests performed by hospital outpatient labs are reimbursed under the Medicare Part B program, claims for the tests are actually processed by Medicare Part A fiscal intermediaries. Consequently, data on outpatient lab tests were not contained in the same data sets as data on tests performed by independent labs and

POLs. Because the magnitude of outpatient testing has important implications for the demonstration project, we conducted in-depth analyses of outpatient lab claims data for Tennessee and North Carolina.

One of the key issues in the design of the demonstration is which labs should be required to submit bids. A possible criterion for determining bidding requirements is lab size, as measured by allowed charges. In Section 3.1.7, we analyze the effects of requiring bidding by labs with over $200,000 or over $100,000 in allowed charges, using 1994 data from Tennessee.

We repeat most of these analyses for North Carolina in Section 3.2, although we go into less detail on hospital lab tests. Briefly, the key results for North Carolina are as follows:

- The top procedures in North Carolina were quite similar to the top procedures nationwide (Section 3.2.1).
- Virtually all specimens drawn in North Carolina were tested in North Carolina. Moreover, unlike in Tennessee, the Medicare Part B carrier processed virtually all lab claims for specimens drawn in North Carolina. As in Tennessee, North Carolina labs tested a large share of out-of-state specimens (Section 3.2.2).
- North Carolina's lab sector was much more concentrated than Tennessee's (Section 3.2.3). The largest lab in North Carolina accounted for 56 percent of total and 88 percent of independent lab allowed charges in North Carolina.
- North Carolina lab trends are similar to national trends.

3.1 TENNESSEE

3.1.1 High-Volume Test List

An important question for the design of the demonstration project is whether the distribution of procedures within a local market is similar to the national distribution of tests. Table 3-1 compares the rankings for Tennessee procedures based on allowed charges to the national rankings based on allowed charges. The national data include carrier data only, while the Tennessee data include carrier data (tests performed by independent labs and POLs) from the Lab SAF and hospital data from the Outpatient SAF (tests performed by

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994
Procedures with high allowed charges nationally generally had high allowed charges in Tennessee.

			Tennessee Rankings				
Procedure Code	**Procedure Name**	**U.S. Rank—Carrier Data**	**Carrier and Hospital Data**	**Carrier Data**	**Hospital Total**	**Hospital Nonpatient Testing**	**Hospital Patient Testing**
80019	19 blood/urine tests	1	1	1	1	1	1
85025	Automated hemogram	2	2	3	2	4	2
G0001	Drawing blood for specimen	3	4	5	6	7	5
80092	Thyroid panel w/TSH	4	13	11	26	22	33
84443	Assay thyroid stim hormone	5	10	8	13	9	15
83718	Blood lipoprotein assay	6	7	4	29	23	46
85024	Automated hemogram	7	3	2	7	11	4
84153	Prostate specific antigen	8	9	7	14	6	26
80061	Lipid panel	9	15	13	22	14	29
81000	Urinalysis, nonauto, w/scope	10	5	6	11	17	12
85610	Prothrombin time	11	8	10	5	2	13
80162	Assay for digoxin	12	6	9	4	3	8
83550	Iron binding test	13	32	16	100	77	129
87086	Urine culture, colony count	14	18	20	20	13	22
82728	Assay ferritin	15	38	32	41	34	44
80016	13-16 blood/urine tests	16	45	40	53	66	41
83036	Glycated hemoglobin test	17	20	14	35	28	53
82947	Assay quantitative, glucose	18	12	12	17	8	36
83540	Assay iron	19	33	18	70	61	83
84436	Assay, total thyroxine	20	28	17	47	35	57
85023	Automated hemogram	21	11	25	3	5	3

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	Procedure Name	U.S. Rank—Carrier Data	Carrier and Hospital Data	Carrier Data	Hospital Total	Hospital Nonpatient Testing	Hospital Patient Testing
80018	17-18 blood/urine tests	22	16	31	9	20	9
80091	Thyroid panel	23	26	19	38	31	42
80007	7 clinical chemistry tests	24	14	22	8	12	7
82378	Carcinoembryonic antigen	25	39	38	39	38	37
83735	Assay magnesium	26	24	15	45	41	47
82607	Vitamin B-12	27	27	26	28	26	38
85651	RBC sed rate, nonauto	28	34	24	49	45	52
83970	Assay of parathormone	29	46	39	57	63	50
80002	1-2 clinical chemistry tests	30	55	57	58	46	68
80185	Assay for phenytoin	31	30	35	24	15	34
87186	Antibiotic sensitivity, MIC	32	23	28	23	18	25
82985	Glycated protein	33	84	60	374	283	459
82270	Test feces for blood	34	49	36	124	99	142
P9604	One-way allow prorated trip	35	81	62	135	86	176
86316	Immunoassay, tumor antigen	36	21	30	18	10	21
87088	Urine bacteria culture	37	36	27	52	40	59
88104	Microscopic exam of cells	38	42	34	55	113	39
86287	Hepatitis B (HBsAg)	39	102	94	89	130	74
85027	Automated hemogram	40	19	23	21	29	16
82746	Blood folic acid serum	41	44	42	44	33	54
86003	Allergen specific IgE	42	142	104	576	500	651

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	Procedure Name	U.S. Rank—Carrier Data	Carrier and Hospital Data	Carrier Data	Hospital Total	Hospital Nonpatient Testing	Hospital Patient Testing
85029	Automated hemogram	43	17	41	10	21	10
80198	Assay for theophylline	44	31	33	25	25	24
80006	6 clinical chemistry tests	45	22	44	15	19	14
87070	Culture specimen, bacteria	46	35	53	19	16	19
82172	Apolipoprotein	47	225	161	704	601	769
83721	Blood lipoprotein assay	48	70	63	77	57	127
84480	Total assay, TT-3	49	76	72	68	59	76
80004	4 clinical chemistry tests	50	48	65	30	24	43
87184	Antibiotic sensitivity, each	51	69	58	108	80	141
81002	Urinalysis, nonauto, w/o scope	52	41	29	90	103	93
84439	Assay, free thyroxine	53	64	69	59	47	73
80003	3 clinical chemistry tests	54	82	73	80	83	78
82108	Assay, aluminum	55	158	142	166	237	137
84132	Assay serum potassium	56	25	21	33	27	49
85021	Automated hemogram	57	43	49	31	32	23
84479	Assay triiodothyronine (T-3)	58	51	45	96	75	132
85730	Thromboplastin time, partial	59	37	82	16	43	11
88173	Interpretation of smear	60	54	47	109	207	82
80058	Hepatic function panel	61	148	166	126	82	168
85102	Bone marrow biopsy	62	71	55	141	211	106

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	**Procedure Name**	**U.S. Rank—Carrier Data**	**Carrier and Hospital Data**	**Carrier Data**	**Hospital Total**	**Hospital Nonpatient Testing**	**Hospital Patient Testing**
P9605	Routine venipuncture	63	100	79	160	97	222
85095	Bone marrow aspiration	64	59	51	84	105	80
84066	Assay prostate phosphatase	65	128	105	182	125	242
88180	Cell marker study	66	47	48	40	52	35
84165	Assay serum proteins	67	60	54	91	79	113
80005	5 clinical chemistry tests	68	109	90	128	91	155
82977	Assay of GGT	69	87	102	65	51	91
82948	Reagent strip/blood glucose	70	50	43	83	111	75
84478	Assay triglycerides	71	58	50	107	87	131
80156	Assay carbamazepine	72	75	76	63	49	86
85022	Automated hemogram	73	65	66	66	62	64
80050	General health panel	74	40	37	42	30	61
85097	Bone marrow interpretation	75	72	59	121	335	92
86422	Radioallergosorbent tests	76	414	298	794	676	Not listed*
80008	8 clinical chemistry tests	77	68	95	46	36	55
86291	Hepatitis BS antibody test	78	147	123	191	197	178
88108	Cytopathology	79	93	88	82	266	62
80012	12 clinical chemistry tests	80	80	109	54	58	48
82150	Assay of amylase	81	53	87	34	56	20
85595	Platelet count, automated	82	126	137	94	101	101
86235	Nuclear antigen antibody	83	85	67	144	116	152

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	**Procedure Name**	**U.S. Rank— Carrier Data**	**Carrier and Hospital Data**	**Carrier Data**	**Hospital Total**	**Hospital Nonpatient Testing**	**Hospital Patient Testing**
P3000	Screen pap by tech w MD supv	84	419	334	453	382	486
83719	Blood lipoprotein assay	85	175	128	340	262	388
82784	Assay gammaglobulin IgM	86	73	61	95	72	136
84403	Assay total testosterone	87	113	93	129	78	181
86038	Antinuclear antibodies	88	95	108	72	68	69
86255	Fluorescent antibody; screen	89	90	74	106	89	124
85031	Manual hemogram, complete CBC	90	89	75	98	74	135
85007	Differential WBC count	91	63	135	37	44	30
82465	Assay serum cholesterol	92	52	46	110	70	170
87163	Special microbiology culture	93	67	68	64	54	81
85030	Automated hemogram	94	86	86	71	112	60
86592	Blood serology, qualitative	95	96	80	119	120	112
86302	Hepatitis C antibody	96	155	148	163	142	154
80009	9 clinical chemistry tests	97	130	157	88	110	88
84466	Transferrin	98	79	56	328	274	354
84520	Assay urea nitrogen	99	88	83	81	84	77
84134	Prealbumin	100	454	352	511	444	539

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	Procedure Name	U.S. Rank—Carrier Data	Carrier and Hospital Data	Carrier Data	Hospital Total	Hospital Nonpatient Testing	Hospital Patient Testing
Top 100 Tennessee Overall or Carrier or Hospital Procedures Not in the U.S. Top 100							
82330	Assay calcium	101	74	52	306	298	295
85060	Blood smear interpretation	104	132	99	242	224	241
80184	Assay for phenobarbitol	106	104	106	86	73	117
88150	Cytopathology, pap smear	107	116	138	74	48	182
87205	Smear, stain & interpret	108	103	113	78	98	67
85018	Hemoglobin	109	94	85	93	76	116
81003	Urinalysis, auto, w/o scope	110	83	71	87	134	70
86430	Rheumatoid factor test	111	110	91	122	115	133
82550	Assay CK (CPK)	112	77	150	43	107	28
84460	Alanine amino (ALT) (SGPT)	113	107	97	105	67	172
80164	Assay, dipropylacetic acid	114	133	129	134	88	166
80178	Assay for lithium	115	127	127	112	71	173
80059	Hepatitis panel	116	115	131	75	64	96
80158	Assay of cyclosporine	117	78	92	56	53	58
82803	Blood gases: pH, pO2 & pCO2	118	29	84	12	42	6
82565	Assay creatinine	120	62	77	51	55	45
86256	Fluorescent antibody; titer	121	118	96	150	122	145
80194	Assay for quinidine	122	101	98	85	69	114
88182	Cell market study	124	106	117	79	163	63
87230	Assay, toxin or antitoxin	127	124	130	101	85	120
88160	Cytopathology	128	114	100	111	131	100

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	Procedure Name	U.S. Rank—Carrier Data	Carrier and Hospital Data	Carrier Data	Hospital Total	Hospital Nonpatient Testing	Hospital Patient Testing
85014	Hematocrit	130	66	64	67	60	66
88107	Microscopic exam of cells	131	105	81	176	304	146
88106	Microscopic exam of cells	132	97	70	241	555	191
88172	Evaluation of smear	133	99	78	158	238	118
81015	Microscopic exam of urine	134	125	200	76	100	65
88170	Fine needle aspiration	135	98	89	92	93	102
83715	Assay blood lipoproteins	139	149	143	159	94	219
80072	Arthritis panel	141	156	177	138	96	158
87040	Blood culture for bacteria	142	61	149	36	50	27
82575	Creatinine clearance test	153	137	144	117	90	140
80202	Assay for vancomycin	179	161	190	133	81	187
82552	Assay, CPK in blood	195	57	164	32	137	18
82805	Blood gases with 02 saturation	196	120	274	69	157	51
83625	Assay LDH enzymes	219	153	290	102	227	72
87117	Mycobacteria culture	231	143	192	103	147	84
86901	Blood typing, Rh (b)	247	154	299	99	219	71
86850	RBC antibody screen	252	129	331	73	178	56
86922	Compatitibility test	262	91	249	50	121	31
86920	Compatibility test	301	108	259	62	191	40
82792	Blood oxygen saturation	302	166	254	116	271	90
82375	Assay blood carbon monoxide	304	187	401	127	323	95
82055	Assay ethanol	305	189	378	131	355	97

(continued)

Table 3-1. Top 100 Procedures in the United States and Tennessee, Ranked by Allowed Charges, 1994 (continued)

			Tennessee Rankings				
Procedure Code	Procedure Name	U.S. Rank—Carrier Data	Carrier and Hospital Data	Carrier Data	Hospital Total	Hospital Nonpatient Testing	Hospital Patient Testing
82553	Creatine, MB fraction	318	56	283	27	201	17
86703	HIV-1/HIV-2, single assay	361	177	236	136	368	98
86999	Transfusion procedure	437	178	582	115	268	87
83874	Myoglobin	578	174	507	113	479	79
80064	Metabolic panel	Not listed*	192	Not listed*	137	326	99
80070	Thyroid panel	Not listed*	112	Not listed*	61	37	105
80080	Prostatic panel	Not listed*	159	Not listed*	97	65	175
82643	Digoxin, RIA	Not listed*	111	Not listed*	60	39	94
84045	Phenytoin	Not listed*	205	Not listed*	148	95	180
86068	Compatibility test	Not listed*	92	Not listed*	48	106	32

Spearman Rank Correlation Coefficients	Coefficient[a]	Number of Procedures[b]
U.S. carrier vs. TN overall	0.7534	1,096
U.S. carrier vs. TN carrier	0.9105	881
U.S. carrier vs. TN hospital	0.6455	1,096
TN overall vs. TN carrier	0.8231	999
TN overall vs. TN hospital	0.9404	1,018
TN carrier vs. TN hospital	0.6719	999
TN carrier vs. TN hospital nonpatient	0.6441	920
TN hospital nonpatient vs. TN hospital patient	0.8623	796

[a] All are significant at the 1 percent level.

[b] The number of procedures performed differed by lab category. For example, more procedures were performed nationwide than in Tennessee. If a procedure was performed in one lab category, but not in a second category, the procedure was assigned a last-place rank in the second category for the purpose of the correlation calculation. If a procedure was not performed by either of the lab categories, it was excluded from the calculation of the rank correlation coefficient.

*"Not listed" means that the test was not performed by labs included in this column.

Source: U.S.: 1994 Physician/Supplier Procedure File (carrier tests only);
Tennessee: 1994 Lab and Outpatient SAFs.

hospital outpatient labs). The Tennessee rankings were based on specimens drawn by providers in Tennessee.

The first 100 rows of Table 3-1 represent the top 100 tests performed in the U.S. Columns 1 and 2 of Table 3-1 list the procedure code and the names of the top 100 tests in the U.S. based on carrier data covering independent labs and POLs. Column 3 shows the rank of each test in the U.S., and column 4 shows the rank of the test in Tennessee using combined carrier and hospital data. Column 5 shows the rank of each test based on the Tennessee carrier data. In principle, this ranking should correspond most closely with the U.S. rankings because both rankings are derived from carrier data only. Column 6 shows the ranking of each test in hospital data. Columns 7 and 8 show the ranking of each test by hospital nonpatient and patient tests, respectively.

Patient lab claims are incurred by individuals who are registered outpatients at the hospital, including acutely ill persons who enter the hospital's emergency room or persons who come to the hospital to receive scheduled care on an outpatient basis. Nonpatient lab claims are incurred by individuals who never physically enter the hospital. The hospital lab performs tests on the nonpatient's specimen, but the nonpatient never actually visits the hospital. Hospitals sometimes refer to nonpatient lab testing as outreach testing.

After the first 100 rows, the next set of rows lists tests that are in the top 100 tests in carrier or hospital lab tests, but are not included in the top 100 tests in the U.S. The last rows in Table 3-1 show the Spearman rank correlation coefficients, which are based on the rankings for all procedures (including those not ranked in the top 100 for any of the categories) performed by each pair of lab categories. By looking at the Spearman Rank coefficients, we can compare the similarity of the mixes between each of the columns. A coefficient close to 1 means that the ranks are similar; a coefficient close to zero means they are not. All of the coefficients tested are significant at the 1 percent level.

Looking first at carrier rankings, the U.S. and Tennessee carrier rankings are quite similar. The Spearman rank correlation coefficient between the two rankings is a strong 0.9105. The top 10 tests nationally are all ranked among the top 13 tests in Tennessee, and 83 procedures are in the top 100 in both rankings. Three top 100 tests nationally (86422, P3000, and 84134) do not make the top 200 in Tennessee. In contrast, all of the top 100 tests in Tennessee are ranked among the top 135 tests nationally.

There is more variation between the U.S. carrier and Tennessee hospital rankings. The Spearman rank correlation coefficient is 0.6455, still significant, but not nearly as strong as the correlation between the U.S. and Tennessee carrier rankings. The top 10 U.S. carrier tests are ranked as low as 29 in the overall Tennessee hospital rankings (and as low as 46 in hospital patient testing). Conversely, the top 10 hospital tests in Tennessee are ranked as low as 43 in the U.S. carrier data. Twenty-seven tests that ranked among the top 100 tests in U.S. carrier data are absent from the Tennessee top 100 rankings for hospital labs, and a few (82985, 86003, 82172, 86422, and P3000) are almost never performed in Tennessee hospital labs. Tennessee hospitals also appear less likely than U.S. independent labs and POLs to perform disease panels, iron binding tests, and iron assays. Hospital labs are more likely to perform certain types of automated hemograms; automated chemistry panels of 7 or fewer tests; bacteria culture specimens; thromboplastin times, partial; blood gases: pH, pO2 & pCO2; assay CPK in blood; creatine, MB fraction; compatibility tests; and blood culture for bacteria.

Because the Tennessee overall ranking combines the Tennessee carrier and hospital rankings, it reflects both the similarities and differences of its components relative to the U.S. rankings. The top 10 tests nationwide all rank among the top 15 tests overall in Tennessee, and 84 of the top 100 tests nationally are also in the top 100 in Tennessee. As would be expected from the combination of the two Tennessee data sets, the Spearman rank correlation coefficient of 0.7534 is higher than the correlation between the U.S. carrier and the Tennessee hospital rankings, but lower than the correlation between the U.S. and Tennessee carrier rankings.

Not surprisingly, given the fairly close correspondence between the U.S. and Tennessee carrier rankings, the differences between the Tennessee carrier and Tennessee hospital rankings are similar to the differences between the U.S. carrier and Tennessee hospital rankings. A few tests (82172, 86422, P3000, and 84134) are less common in both the Tennessee carrier and hospital rankings than they are in the U.S. carrier rankings. The Spearman rank correlation coefficient between the Tennessee carrier and Tennessee hospital data is 0.6719, higher than the correlation between the U.S. carrier and Tennessee hospital rankings.

Within Tennessee hospitals, the mix of tests performed on nonpatients and patients is highly correlated, as shown by the Spearman rank correlation coefficient of 0.8623. Sixty-eight tests are in the top 100 rankings for both nonpatient and patient testing. Tests that are much more common for nonpatients than for patients include blood lipoprotein assay, prostate specific antigen, and glucose, while tests that are much more common for patients than nonpatients include thromboplastin time, partial; assay of amylase; blood gases: pH, pO2 & pCO2; assay CPK in blood; creatine, MB fraction; compatibility tests; and blood culture for bacteria.

One final comparison of interest is the correlation between Tennessee carrier and Tennessee hospital nonpatient rankings. This comparison is interesting because hospital nonpatient testing may be a fairly close substitute for independent lab and POL testing. The Spearman rank correlation coefficient between Tennessee carrier and nonpatient rankings is 0.6441, indicating a strong correlation, but not stronger than the correlation between the Tennessee carrier and overall hospital rankings.

Table 3-2 reproduces from Table 3-1 the national and Tennessee rankings for the preliminary list of demonstration tests. The table also shows allowed charges and the independent lab, POL, and hospital market shares for each demonstration test. The Tennessee figures are based on combined carrier and hospital data. As with the Top 100 list, the national and Tennessee rankings for demonstration tests are fairly close, suggesting that Tennessee is fairly representative of the nation. The rankings are even closer if one considers Tennessee carrier data only.

Other findings shown in the table include the following:

- Demonstration tests in Tennessee accounted for about 87 percent of the allowed charges for all lab procedures.
- Independent and hospital labs each accounted for about 34.5 percent of allowed charges for the demonstration tests, while POLs accounted for 31 percent.

Table 3-2. Preliminary Demonstration Tests: U.S. and Tennessee
Demonstration tests had similar national and Tennessee rankings.

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges[a]	Rank in TN by Allowed Charges[b]	Tennessee Allowed Charges	Independent Lab Share	POL Lab Share	Total Hospital Lab Share	Hospital Patient Share	Hospital Nonpatient Share
80002	1-2 clinical chemistry tests	30	55	$214,737	39.6%	22.4%	38.0%	15.6%	22.4%
80003	3 clinical chemistry tests	54	82	$129,890	22.3%	41.7%	36.1%	22.6%	13.4%
80004	4 clinical chemistry tests	50	48	$297,650	26.7%	7.9%	65.4%	22.6%	42.7%
80005	5 clinical chemistry tests	68	109	$80,344	32.0%	36.5%	31.5%	12.8%	18.7%
80006	6 clinical chemistry tests	45	22	$647,206	22.4%	11.8%	65.8%	40.1%	25.7%
80007	7 clinical chemistry tests	24	14	$1,054,831	30.2%	8.6%	61.3%	39.1%	22.1%
80008	8 clinical chemistry tests	77	68	$160,903	18.8%	12.1%	69.1%	32.7%	36.4%
80009	9 clinical chemistry tests	97	130	$55,530	19.0%	11.2%	69.8%	48.6%	21.1%
80010	19 Clinical chemistry tests	103	152	$36,648	42.3%	19.6%	38.0%	29.5%	8.6%
80012	12 clinical chemistry tests	80	80	$136,150	16.0%	15.5%	68.5%	44.5%	24.1%
80016	13-16 blood/urine tests	16	45	$342,724	24.5%	47.8%	27.7%	20.0%	7.8%
80018	17-18 blood/urine tests	22	16	$834,512	14.5%	22.1%	63.4%	43.5%	19.9%
80019	19 blood/urine tests	1	1	$6,209,721	41.3%	24.7%	34.0%	17.8%	16.2%
80050	General health panel	74	40	$388,932	31.3%	35.9%	32.7%	11.6%	21.1%
80058	Hepatic function panel	61	148	$40,145	0.5%	35.5%	64.0%	19.6%	44.4%
80061	Lipid panel	9	15	$925,901	44.7%	22.8%	32.5%	11.9%	20.6%
80091	Thyroid panel	23	26	$590,118	65.8%	9.2%	25.0%	11.5%	13.5%
80092	Thyroid panel w/TSH	4	13	$1,205,324	69.5%	10.1%	20.4%	7.8%	12.6%
80162	Assay for digoxin	12	6	$2,174,549	40.0%	13.0%	47.0%	17.5%	29.5%
80185	Assay for phenytoin	31	30	$542,047	44.6%	5.5%	49.9%	17.0%	32.9%
80198	Assay for theophylline	44	31	$524,255	31.5%	21.5%	47.0%	22.9%	24.0%
81000	Urinalysis, nonauto, w/scope	10	5	$2,181,142	6.9%	70.7%	22.4%	14.4%	8.0%
81002	Urinalysis, nonauto, w/o scope	52	41	$382,519	10.9%	79.4%	9.8%	6.5%	3.3%
81003	Urinalysis, auto, w/o scope	110	83	$127,218	54.0%	15.5%	30.5%	24.8%	5.7%

(continued)

Table 3-2. Preliminary Demonstration Tests: U.S. and Tennessee (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges[a]	Rank in TN by Allowed Charges[b]	Tennessee Allowed Charges	Independent Lab Share	POL Lab Share	Total Hospital Lab Share	Hospital Patient Share	Hospital Nonpatient Share
81005	Urinalysis	169	221	$16,128	2.1%	59.4%	38.5%	35.7%	2.9%
81015	Microscopic exam of urine	134	125	$59,019	2.8%	12.3%	84.8%	61.9%	22.9%
82150	Assay of amylase	81	53	$227,224	14.6%	12.3%	73.1%	57.2%	15.9%
82172	Apolipoprotein	47	225	$15,107	14.9%	84.3%	0.7%	0.2%	0.6%
82250	Assay bilirubin	345	323	$5,952	8.0%	27.2%	64.7%	39.5%	25.2%
82270	Test feces for blood	34	49	$292,496	3.7%	87.5%	8.8%	4.2%	4.7%
82310	Assay calcium	171	167	$32,116	42.6%	12.5%	44.9%	17.6%	27.2%
82330	Assay calcium	101	74	$150,912	97.7%	0.1%	2.2%	1.3%	0.8%
82378	Carcinoembryonic antigen	25	39	$394,981	46.6%	17.2%	36.2%	22.0%	14.1%
82465	Assay serum cholesterol	92	52	$227,990	20.1%	66.6%	13.3%	3.4%	9.9%
82540	Assay creatine	297	287	$8,548	2.1%	21.6%	76.3%	47.3%	29.0%
82550	Assay CK (CPK)	112	77	$143,405	6.9%	6.4%	86.7%	78.3%	8.5%
82565	Assay creatinine	120	62	$175,610	8.5%	33.1%	58.3%	36.1%	22.2%
82570	Assay urine creatinine	235	257	$10,630	43.0%	2.4%	54.6%	23.4%	31.2%
82607	Vitamin B-12	27	27	$586,519	58.9%	5.8%	35.2%	14.3%	20.9%
82728	Assay ferritin	15	38	$430,669	60.5%	9.6%	29.9%	15.6%	14.3%
82746	Blood folic acid serum	41	44	$344,002	64.7%	1.6%	33.7%	15.6%	18.1%
82784	Assay gammaglobulin IgM	86	73	$151,199	68.4%	8.6%	23.0%	8.9%	14.1%
82947	Assay quantitative, glucose	18	12	$1,335,782	16.8%	54.2%	29.0%	6.5%	22.5%
82948	Reagent strip/blood glucose	70	50	$268,294	0.2%	84.0%	15.8%	11.4%	4.4%
82962	Glucose blood test	125	136	$48,435	5.2%	68.8%	25.9%	24.9%	1.0%
82977	Assay of GGT	69	87	$114,740	3.7%	35.9%	60.4%	22.8%	37.6%
82985	Glycated protein	33	84	$125,042	79.8%	18.8%	1.5%	0.4%	1.1%
83036	Glycated hemoglobin test	17	20	$711,221	41.0%	35.8%	23.2%	7.6%	15.6%

(continued)

Table 3-2. Preliminary Demonstration Tests: U.S. and Tennessee (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges[a]	Rank in TN by Allowed Charges[b]	Tennessee Allowed Charges	Independent Lab Share	POL Lab Share	Total Hospital Lab Share	Hospital Patient Share	Hospital Nonpatient Share
83520	Immunoassay, RIA	168	117	$70,680	10.5%	54.7%	34.7%	13.8%	20.9%
83540	Assay iron	19	33	$503,525	83.0%	5.4%	11.6%	5.5%	6.0%
83550	Iron binding test	13	32	$505,360	92.5%	0.8%	6.7%	3.1%	3.6%
83615	Lactate (LD) (LDH) enzyme	277	164	$32,485	4.2%	6.6%	89.1%	82.9%	6.2%
83690	Assay lipase	180	139	$46,355	27.8%	1.2%	71.0%	59.7%	11.3%
83718	Blood lipoprotein assay	6	7	$2,129,780	62.0%	28.7%	9.2%	2.9%	6.3%
83721	Blood lipoprotein assay	48	70	$158,157	20.2%	48.7%	31.1%	10.0%	21.2%
83735	Assay magnesium	26	24	$634,952	63.9%	18.2%	17.9%	9.7%	8.2%
83970	Assay of parathormone	29	46	$334,488	73.7%	0.5%	25.8%	17.3%	8.5%
84066	Assay prostate phosphatase	65	128	$56,753	70.7%	8.6%	20.7%	6.4%	14.3%
84075	Assay alkaline phosphatase	248	209	$19,854	10.1%	55.9%	34.0%	16.6%	17.3%
84100	Assay phosphorus	279	232	$14,150	59.2%	1.9%	38.9%	16.2%	22.7%
84132	Assay serum potassium	56	25	$595,703	18.2%	52.6%	29.2%	9.8%	19.4%
84153	Prostate specific antigen	8	9	$1,935,285	55.6%	19.8%	24.6%	6.1%	18.5%
84155	Assay protein	204	179	$28,505	46.6%	1.8%	51.6%	29.8%	21.8%
84165	Assay serum proteins	67	60	$180,953	41.2%	38.7%	20.1%	10.0%	10.2%
84295	Assay serum sodium	202	131	$54,851	11.8%	65.9%	22.2%	8.6%	13.6%
84436	Assay, total thyroxine	20	28	$569,947	47.4%	33.5%	19.1%	8.7%	10.4%
84439	Assay, free thyroxine	53	64	$172,674	17.4%	36.9%	45.7%	17.9%	27.8%
84443	Assay thyroid stim hormone	5	10	$1,786,041	47.3%	26.0%	26.8%	12.0%	14.7%
84450	Transferase (AST) (SGOT)	161	123	$62,181	12.8%	43.6%	43.6%	26.6%	17.0%
84460	Alanine amino (ALT) (SGPT)	113	107	$80,650	36.7%	23.5%	39.8%	9.2%	30.6%
84466	Transferrin	98	79	$137,675	98.1%	0.0%	1.9%	0.8%	1.1%
84478	Assay triglycerides	71	58	$190,355	23.0%	60.5%	16.5%	7.9%	8.7%

(continued)

Table 3-2. Preliminary Demonstration Tests: U.S. and Tennessee (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges[a]	Rank in TN by Allowed Charges[b]	Tennessee Allowed Charges	Independent Lab Share	POL Lab Share	Total Hospital Lab Share	Hospital Patient Share	Hospital Nonpatient Share
84479	Assay triiodothyronine (T-3)	58	51	$233,993	59.2%	25.9%	14.9%	6.3%	8.6%
84520	Assay urea nitrogen	99	88	$114,347	10.7%	48.6%	40.7%	25.9%	14.8%
84550	Assay blood uric acid	182	162	$33,436	20.5%	50.3%	29.1%	14.8%	14.3%
85007	Differential WBC count	91	63	$174,796	6.4%	7.0%	86.6%	57.7%	28.9%
85013	Hematocrit	244	219	$16,334	1.7%	88.0%	10.3%	8.0%	2.3%
85014	Hematocrit	130	66	$170,342	21.0%	39.9%	39.1%	21.0%	18.2%
85018	Hemoglobin	109	94	$103,200	23.9%	40.9%	35.2%	17.1%	18.1%
85021	Automated hemogram	57	43	$361,028	6.9%	39.6%	53.6%	34.9%	18.7%
85022	Automated hemogram	73	65	$170,831	1.1%	59.2%	39.7%	22.3%	17.5%
85023	Automated hemogram	21	11	$1,547,767	7.3%	17.6%	75.2%	49.3%	25.9%
85024	Automated hemogram	7	3	$3,570,678	5.4%	73.8%	20.7%	13.9%	6.8%
85025	Automated hemogram	2	2	$3,965,425	47.0%	18.7%	34.4%	23.0%	11.4%
85027	Automated hemogram	40	19	$714,107	30.1%	26.6%	43.3%	29.6%	13.7%
85029	Automated hemogram	43	17	$756,538	8.0%	24.3%	67.6%	47.3%	20.3%
85030	Automated hemogram	94	86	$120,033	0.0%	52.7%	47.3%	37.7%	9.6%
85031	Manual hemogram, complete CBC	90	89	$110,418	0.5%	68.7%	30.8%	12.3%	18.5%
85044	Reticulocyte count	123	119	$67,002	48.0%	17.5%	34.5%	15.9%	18.6%
85048	White blood cell (WBC) count	183	121	$64,909	31.2%	38.4%	30.4%	12.1%	18.3%
85610	Prothrombin time	11	8	$2,103,157	28.1%	26.4%	45.5%	14.1%	31.4%
85651	RBC sed rate, nonauto	28	34	$489,605	24.5%	54.1%	21.4%	11.5%	10.0%
85730	Thromboplastin time, partial	59	37	$458,679	11.3%	3.5%	85.2%	74.0%	11.2%
86255	Fluorescent antibody; screen	89	90	$110,087	63.4%	7.8%	28.8%	15.0%	13.8%
86287	Hepatitis B (HBsAg)	39	102	$89,316	56.0%	0.7%	43.3%	34.5%	8.8%

(continued)

Table 3-2. Preliminary Demonstration Tests: U.S. and Tennessee (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges[a]	Rank in TN by Allowed Charges[b]	Tennessee Allowed Charges	Independent Lab Share	POL Lab Share	Total Hospital Lab Share	Hospital Patient Share	Hospital Nonpatient Share
86291	Hepatitis BS antibody test	78	147	$40,216	74.5%	0.7%	24.8%	17.5%	7.3%
86316	Immunoassay, tumor antigen	36	21	$705,159	21.7%	25.5%	52.7%	18.0%	34.7%
86430	Rheumatoid factor test	111	110	$79,450	41.2%	26.1%	32.7%	18.4%	14.3%
86592	Blood serology, qualitative	95	96	$99,195	68.8%	3.4%	27.8%	18.3%	9.5%
G0001	Drawing blood for specimen	3	4	$2,661,615	12.8%	57.9%	29.2%	16.6%	12.6%
P9604	One-way allow prorated trip	35	81	$134,316	81.8%	0.5%	17.8%	5.3%	12.5%
P9605	Routine venipuncture	63	100	$91,022	80.0%	0.1%	19.9%	4.8%	15.2%
	Total—Demonstration Tests			$54,817,427	34.5%	31.0%	34.5%	18.4%	16.1%
	Total—Demonstration Tests (without G0001)			$52,155,812	35.6%	29.6%	34.8%	18.7%	16.1%
	Total—All Tests			$66,649,181	33.6%	28.9%	34.5%	21.1%	16.5%

[a] Carrier data only.

[b] Carrier and hospital data combined.

Source: U.S.: 1994 Physician/Supplier Procedure File (carrier tests only); Tennessee: 1994 Lab and Outpatient SAFs.

- Independent lab shares range all the way from 0 percent to nearly 100 percent. Some of the procedures for which independent labs have low shares should be included as demonstration tests because they are close substitutes for procedures that are commonly performed by independent labs. For example, independent labs perform relatively few automated hemograms with procedure codes equal to 85024 (5.2 percent) or 85030 (0 percent), but they produce nearly half of all automated hemograms coded as 85025, and the latter code has the second-highest allowed charges in the state.

3.1.2 Locational Analyses

A key issue for the demonstration design is how to operationally define which tests are included in the demonstration area. For example, if Tennessee is selected to be the demonstration area, tests could be defined to be "Tennessee" tests in at least four ways:

- if the specimen is drawn in Tennessee,
- if the Medicare beneficiary lives in Tennessee,
- if the lab performing the test is located in Tennessee, or
- if the Tennessee Part B carrier processes the claim.

These definitions are directly related to the issue of interstate transport of specimens and claims, which has been discussed in previous sections.

To determine whether the different definitions make a difference in practice (i.e., the set of claims qualifying under the first definition significantly differs from the set of claims meeting the second criteria, and so on), we performed detailed locational analyses of separate data extracts from the Lab SAF for Tennessee and North Carolina. Thus, the analyses only includes data from independent labs and POLs, unless otherwise specified. Claims were included in the Tennessee extract if

- the lab performing the test was located in Tennessee,
- the beneficiary lived in Tennessee, or
- the referring physician who drew the specimen practiced in Tennessee.

The North Carolina extract was constructed in a similar fashion.

For Tennessee and North Carolina, we performed separate locational analyses on

- specimens drawn in the state,
- beneficiaries living in the state, and
- labs located in the state.

Tennessee Specimens

The analytic universe for this subsection was the set of all carrier lab claims that originated from a specimen drawn in Tennessee in 1994. Medicare Part B claims include a data field for the referring provider's Unique Provider Identification Number (UPIN). We linked this UPIN to the referring provider's ZIP code using a file provided by HCFA. This link was not perfect because some providers operated in more than one state; when this occurred, we assigned the location to the provider's modal ZIP code, or, in the case of modal ties, to the first ZIP code appearing for the physician.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests resulting from specimens drawn in Tennessee was 4.9 million for all procedures and 4.4 million for demonstration tests.

Table 3-3 shows the lab location where specimens drawn in Tennessee were processed in 1994. Based on all procedures, most (about 87 percent) specimens drawn in Tennessee were processed in labs located in Tennessee. A moderate amount of Tennessee specimens were shipped out-of-state, with about 7 percent going to labs in North Carolina (primarily Roche's national reference lab), and the remaining 6 percent going to labs in other states. The distribution was similar for demonstration tests, which accounted for 87 percent of the total allowed charges for specimens originating in Tennessee.

Table 3-4 shows the distribution, by beneficiary residence, of specimens drawn in Tennessee. Most (86 percent) of the specimens drawn in Tennessee were drawn from Tennessee residents. But Tennessee borders on eight states, and each of these states accounted for 0.3 to 2.4 percent of the allowed charges associated with specimens drawn in Tennessee. Another one percent came from Florida residents. Thus, border-crossing into Tennessee was

Table 3-3. Allowed Charges by Lab Location for Specimens Drawn in Tennessee
Most specimens drawn in Tennessee were analyzed in Tennessee, although some out-of-state transport to North Carolina occurred.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	36.3	87.1	31.5	87.5
North Carolina	3.0	7.3	2.4	6.8
Kentucky	0.4	0.9	0.3	1.0
Florida	0.3	0.8	0.3	0.8
Georgia	0.2	0.5	0.2	0.5
Mississippi	0.2	0.5	0.2	0.5
Other States	1.2	3.0	1.1	3.0
Total	$41.6	100.0%[a]	$36.0	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.

Source: 1994 Lab SAF.

Table 3-4. Allowed Charges by Beneficiary Residence for Specimens Drawn in Tennessee
Most specimens drawn in Tennessee were drawn from in-state beneficiaries, but about 10 percent were drawn from beneficiaries in bordering states.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	35.8	86.2	31.0	86.0
Alabama	0.3	0.7	0.3	0.7
Arkansas	0.4	1.0	0.3	0.9
Florida	0.4	1.0	0.3	1.0
Georgia	0.7	1.8	0.7	1.9
Kentucky	0.6	1.5	0.6	1.6
Mississippi	1.0	2.4	0.9	2.5
Missouri	0.1	0.3	0.1	0.3
North Carolina	0.2	0.5	0.2	0.5
Virginia	0.7	1.8	0.6	1.8
Other States	1.1	2.7	1.0	2.8
Total	$41.3	100.0%[a]	$33.4	100.0%

[a] Percentage may not add to 100 percent due to rounding.

Source: 1994 Lab SAF.

common. The distribution of Tennessee specimens by beneficiary residence for demonstration tests was similar to the distribution for all procedures.

Only about 70 percent of the claims for lab tests originating from Tennessee were actually processed by CIGNA, as the Medicare Part B carrier for Tennessee (Table 3-5). Another 7.3 percent were processed by CIGNA, through its North Carolina Part B carrier operations. These were primarily claims from Roche labs; CIGNA-North Carolina processed claims for all Roche labs nationwide in 1994 (this arrangement ended in April 1996). Blue Shield of Delaware processed over 14 percent of the allowed charges for claims originating from Tennessee specimens. These represented claims from SmithKline Beecham; Blue Shield of Delaware processed claims for most SmithKline Beecham labs nationwide.

Table 3-5. Allowed Charges by Medicare Carrier for Specimens Drawn in Tennessee
Over one-fourth of the allowed charges resulting from specimens drawn in Tennessee were not processed by the Tennessee carrier.

	All Procedures		Demonstration Tests	
Location	$ (Million)	%	$ (Million)	%
CIGNA-Tennessee	29.5	70.3	25.4	70.8
Blue Shield of Delaware	5.9	14.1	5.1	14.3
CIGNA-North Carolina	3.1	7.3	2.5	6.9
Railroad Board	1.0	2.5	0.9	2.4
Other Carriers	2.5	5.8	2.1	6.2
Total	$42.0	100.0%	$36.0	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.
Source: 1994 Lab SAF.

The Railroad Board processed about 2.5 percent of the allowed charges originating from Tennessee specimens, and the remaining 6 percent of allowed charges were processed by 52 other carriers. Once again, the distribution for demonstration tests was similar to the distribution for all procedures.

The large number of lab specimens that were drawn in Tennessee but processed by Medicare Part B carriers other than CIGNA-Tennessee has important implications for the design of the demonstration project. Defining tests from the demonstration area on the basis of carrier processing will not provide a reasonable approximation of a definition based on the area where specimens originated.

Defining tests from the demonstration area on the basis of carrier processing will not provide a reasonable approximation of a definition based on the area where specimens originated.

Tennessee Beneficiaries

The analytic universe for this subsection was the set of all carrier lab claims for Tennessee beneficiaries in 1994. The Lab SAF contains a variable for beneficiary residence.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests performed on Tennessee beneficiaries was 4.3 million for all procedures and 3.9 million for demonstration tests.

Table 3-6 shows the lab location where Tennessee beneficiaries' lab tests were performed. About 87 percent of Tennessee beneficiaries' lab tests were performed in Tennessee. About 13 percent were performed in North Carolina, and about 0.2 percent were performed in other states. Thus, although a significant number of Tennessee beneficiary tests were performed outside of Tennessee, virtually all of these were performed in North Carolina. Demonstration tests, which accounted for about 87 percent of all lab allowed charges for Tennessee beneficiaries, had nearly the same distribution by lab location as all procedures.

Table 3-6. Allowed Charges by Lab Location for Tests Performed on Tennessee Beneficiaries
Most tests on Tennessee beneficiaries were performed in Tennessee, with about 12 percent of tests performed in North Carolina.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	33.0	87.2	28.8	87.5
North Carolina	4.8	12.6	4.1	12.4
Other States	<0.1	0.2	<0.1	0.2
Total	$37.9	100.0%	$33.0	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.

Source: 1994 Lab SAF.

Table 3-7 shows the state where specimens from Tennessee beneficiaries were drawn. Almost 95 percent of Tennessee beneficiaries' specimens were drawn by providers with UPINs in Tennessee. Another 5 percent of Tennessee beneficiaries were drawn by providers with UPINs in North Carolina. Just 0.02 percent of Tennessee beneficiaries had specimens drawn in other states. The distribution for demonstration tests is similar to the distribution for all procedures.

Table 3-7. Allowed Charges by State Where Specimens Were Drawn from Tennessee Beneficiaries

Nearly 95 percent of Tennessee beneficiaries had their specimens drawn in-state.

State Where Specimen Was Drawn	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	35.8	94.7	31.0	94.3
North Carolina	2.0	5.3	1.9	5.7
Other States	<0.1	<0.1	<0.1	<0.1
Total	$37.9	100.0%	$33.0	100.0%

Source: 1994 Lab SAF.

Overall, these results suggest that almost all Tennessee residents had lab specimens drawn within the state. However, the large number of Tennessee beneficiaries who had specimens drawn in North Carolina is surprising.

About 71 percent of allowed charges for Tennessee beneficiaries were processed by CIGNA-Tennessee (Table 3-8). Another 12 percent were processed by CIGNA-North Carolina, 14 percent were processed by Blue Shield of Delaware, and 2 percent were processed by the Railroad Board. The remaining 0.2 percent of claims were processed by 20 other carriers. As discussed under "Tennessee Specimens," CIGNA-North Carolina processed claims for all Roche labs in 1994, while Blue Shield of Delaware processed claims from most SmithKline Beecham labs. The distribution for demonstration tests was virtually the same as the distribution for all procedures.

Table 3-8. Allowed Charges by Medicare Carrier for Tennessee Beneficiaries
About 29 percent of lab claims for Tennessee beneficiaries were not processed by the Tennessee Part B carrier.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
CIGNA-Tennessee	26.8	70.8	23.2	70.6
Blue Shield of Delaware	5.3	14.2	4.8	14.6
CIGNA-North Carolina	4.7	12.4	4.0	12.2
Railroad Board	0.9	2.4	0.8	2.4
Other Carriers	0.1	0.2	0.1	0.2
Total	$37.8	100.0%	$32.9	100.0%

Source: 1994 Lab SAF.

Tennessee Labs

The analytic universe for this subsection was all carrier tests performed by laboratories located in Tennessee in 1994.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests performed in Tennessee labs was 5.2 million for all procedures and 4.7 million for demonstration tests.

About 76 percent of the allowed charges paid to Tennessee labs originated from specimens drawn in Tennessee (Table 3-9). Two percent were drawn in North Carolina, and the remaining 22 percent were drawn in other states. Tennessee labs analyzed a slightly higher share (78 percent versus 76 percent) of in-state specimens for demonstration tests than they analyzed for all procedures.

Tennessee beneficiaries accounted for about 69 percent of all allowed charges paid to Tennessee labs (Table 3-10). Eight other states (Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, and Virginia) each accounted for at least one percent of the allowed charges paid to Tennessee labs, with

Table 3-9. Allowed Charges by Specimen Origin for Tennessee Labs
About one-fourth of the specimens tested by Tennessee labs originated out-of-state.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	36.3	75.9	31.5	78.1
North Carolina	1.0	2.1	0.9	2.3
Other States	10.5	22.0	7.9	19.6
Total	$47.8	100.0%	$40.3	100.0%

Source: 1994 Lab SAF.

Table 3-10. Allowed Charges by Beneficiary Residence for Tennessee Labs
Out-of-state beneficiaries accounted for about 30 percent of Tennessee lab allowed charges.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
Tennessee	33.0	69.0	28.7	71.5
Alabama	2.6	5.5	2.3	5.6
Arkansas	0.5	1.0	0.4	1.0
Florida	0.6	1.3	0.3	0.8
Georgia	2.8	5.9	2.4	5.9
Kentucky	1.3	2.7	1.0	2.5
Mississippi	1.4	2.9	1.2	2.9
Missouri	0.2	0.5	0.2	0.5
North Carolina	0.7	1.5	0.6	1.6
Virginia	1.5	3.1	1.2	3.0
Other States	3.3	6.8	1.9	4.8
Total	$47.9	100.0%[a]	$40.2	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.
Source: 1994 Lab SAF.

Alabama and Georgia each contributing more than 5 percent. The remaining states accounted for 7 percent of allowed charges paid to Tennessee labs. Again, Tennessee performed a slightly higher percentage of demonstration tests than all procedures on Tennessee beneficiaries.

The large number of out-of-state specimens and out-of-state beneficiaries' tests analyzed by Tennessee labs represent a substantial inflow of tests to Tennessee labs. The inflow of out-of-state tests to Tennessee labs was much greater than the outflow of Tennessee specimens to out-of-state labs (see Table 3-3). Similarly, the inflow of out-of-state beneficiaries' tests to Tennessee labs was much greater than the outflow of Tennessee beneficiary tests to out-of-state labs (see Table 3-6).

During 1994, both Allied Clinical Labs and National Health Laboratories operated national reference laboratories in Tennessee; the presence of these labs largely explains the net inflow of tests into Tennessee. Their presence is also consistent with the finding that the shares of in-state specimens and beneficiaries tested by Tennessee labs were higher for demonstration tests than the shares for all procedures. The relatively common and routine demonstration tests are more likely to be performed in state than esoteric tests that are typically sent to national reference labs.

National Health Laboratories acquired Allied in 1994 and has subsequently merged with Roche to form LabCorp. LabCorp recently closed National Health Laboratories' former national reference laboratory in Nashville. These moves are likely to reduce the flow of testing into Tennessee.

Three-quarters of allowed charges paid to Tennessee labs were processed by CIGNA-Tennessee (Table 3-11). Blue Shield of Delaware paid 18 percent to SmithKline Beecham labs in Tennessee, and carriers in other states processed the remaining 6 percent. The latter number is perhaps surprising, because labs—with the exception of SmithKline Beecham and Roche affiliates—are supposed to submit claims to the carrier in their jurisdiction. Note that CIGNA-North Carolina processed less than one percent of allowed charges to Tennessee labs, whereas it processed significant numbers of specimens drawn in Tennessee and tests performed on Tennessee beneficiaries (see Tables 3-5 and 3-8, respectively). Thus, most of the tests performed by Roche on Tennessee specimens and beneficiaries were actually performed in North Carolina.

Table 3-11. Allowed Charges by Medicare Carrier for Tennessee Labs
About one-fourth of lab claims for Tennessee labs were not processed by the Tennessee Part B carrier.

	All Procedures		Demonstration Tests	
Location	$ (Million)	%	$ (Million)	%
CIGNA-Tennessee	36.1	75.6	30.8	76.6
Blue Shield of Delaware	8.7	18.3	7.7	19.3
CIGNA-North Carolina	<0.1	0.1	<0.1	0.1
Other Carriers	3.0	6.0	1.8	4.0
Total	$47.8	100.0%	$40.3	100.0%

Source: 1994 Lab SAF.

Coverage by County

One of the goals of the demonstration project is to ensure that competitive bidding does not significantly impact beneficiary access to care. Table 3-12 provides information on lab coverage for each of the 95 counties in Tennessee. Urban/rural status, allowed charges, and the county share of statewide allowed charges are shown for each county. The numbers and market shares—based on allowed charges—of independent labs, POLs and other labs, and hospital labs are also shown based on combined carrier and hospital data from 1994 Lab SAF and Outpatient SAF, respectively.

Total allowed charges are the sum for allowed charges of all tests on specimens drawn in that county. For carrier data, county origin was found by mapping the referring provider's ZIP code to the county in which the ZIP code is located. Hospital lab claims do not include precise information on the location where specimens are drawn. Therefore, we assumed that specimens for patient tests at hospitals were drawn in the same county where the hospital is located. We also assumed that nonpatient hospital tests were drawn in the beneficiary's county. Column 4 indicates the county's share in overall state charges. As expected, Davidson (Nashville) and Shelby (Memphis) counties were by far the largest counties in terms of tests drawn.

The numbers of labs providing services to each county were based on CLIA lab numbers. These numbers may overstate the number of distinct labs providing services in each county because some labs

Table 3-12. Lab Coverage by County: Tennessee
Counties with high allowed charges were served by greater numbers of both independent labs and POLs.

				Independent Labs		POLs and Other Labs		Hospital Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)
Anderson	U	$1,264,819	1.9%	10	52.2%	52	18.0%	19	29.8%
Bedford	R	$241,945	0.4%	7	21.9%	16	6.7%	19	71.5%
Benton	R	$106,716	0.2%	6	15.3%	6	5.6%	16	79.1%
Bledsoe	R	$61,176	0.1%	1	1.6%	3	4.9%	10	93.6%
Blount	U	$986,675	1.5%	8	17.3%	29	11.9%	18	70.8%
Bradley	R	$798,859	1.2%	14	26.0%	58	32.7%	20	41.3%
Campbell	R	$596,729	0.9%	6	11.9%	39	20.7%	15	67.4%
Cannon	R	$158,098	0.2%	12	52.0%	11	24.0%	9	24.0%
Carroll	R	$399,827	0.6%	7	8.7%	30	42.8%	20	48.5%
Carter	U	$393,847	0.6%	4	5.2%	18	5.7%	12	89.1%
Cheatham	U	$134,594	0.2%	6	11.7%	1	2.1%	15	86.2%
Chester	R	$22,574	0.0%	1	3.7%	4	72.2%	9	24.1%
Claiborne	R	$313,934	0.5%	7	22.5%	9	15.5%	11	62.0%
Clay	R	$74,725	0.1%	5	15.8%	6	5.5%	8	78.6%
Cocke	R	$355,422	0.5%	9	23.9%	26	35.1%	14	41.0%
Coffee	R	$427,932	0.6%	7	45.7%	28	9.6%	17	44.7%
Crockett	R	$90,304	0.1%	2	4.4%	9	84.8%	11	10.9%
Cumberland	R	$432,396	0.6%	8	15.7%	13	51.9%	18	32.3%
Davidson	U	$9,004,858	13.5%	43	37.3%	479	30.8%	44	31.9%
DeKalb	R	$169,435	0.3%	10	30.2%	9	38.8%	14	31.0%
Decatur	R	$248,444	0.4%	5	11.0%	5	1.7%	14	87.3%
Dickson	U	$392,000	0.6%	13	28.1%	34	17.6%	13	54.3%
Dyer	R	$502,532	0.8%	7	4.0%	32	65.1%	13	30.9%
Fayette	R	$109,516	0.2%	4	3.2%	21	51.9%	8	44.9%
Fentress	R	$209,915	0.3%	5	1.9%	3	10.6%	12	87.5%
Franklin	R	$521,486	0.8%	6	47.1%	43	21.2%	15	31.8%
Gibson	R	$260,420	0.4%	6	10.8%	21	24.6%	15	64.6%
Giles	R	$318,735	0.5%	6	31.3%	19	29.2%	11	39.6%
Grainger	U	$79,656	0.1%	2	41.2%	5	4.9%	14	53.8%
Greene	R	$664,733	1.0%	9	42.1%	49	31.4%	18	26.5%
Grundy	R	$56,093	0.1%	4	39.2%	5	4.6%	13	56.2%
Hamblen	R	$834,558	1.3%	14	40.7%	44	32.4%	20	26.8%
Hamilton	U	$5,136,646	7.7%	21	39.0%	216	31.1%	31	29.9%
Hancock	R	$63,629	0.1%	4	55.3%	1	0.7%	11	44.0%
Hardeman	R	$575,272	0.9%	11	27.9%	79	63.7%	8	8.4%

(continued)

Table 3-12. Lab Coverage by County: Tennessee (continued)

				Independent Labs		POLs and Other Labs		Hospital Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)
Hardin	R	$274,152	0.4%	2	1.0%	11	24.6%	14	74.4%
Hawkins	U	$334,859	0.5%	9	32.2%	25	8.2%	14	59.6%
Haywood	R	$166,421	0.3%	7	28.3%	18	40.5%	9	31.2%
Henderson	R	$156,269	0.2%	4	5.3%	10	42.1%	14	52.5%
Henry	R	$314,473	0.5%	6	10.1%	14	50.6%	16	39.2%
Hickman	R	$272,989	0.4%	8	13.8%	29	44.8%	9	41.4%
Houston	R	$96,922	0.1%	8	23.1%	15	23.4%	8	53.5%
Humphreys	R	$244,368	0.4%	10	29.4%	21	21.8%	11	48.9%
Jackson	R	$93,920	0.1%	2	5.4%	0	0.2%	11	94.5%
Jefferson	U	$364,453	0.5%	8	23.4%	33	22.6%	12	54.0%
Johnson	R	$178,283	0.3%	3	32.9%	7	22.0%	7	45.1%
Knox	U	$5,984,431	9.0%	30	28.5%	285	34.1%	27	37.4%
Lake	R	$8,133	0.0%	1	23.7%	0	1.3%	6	75.0%
Lauderdale	R	$241,520	0.4%	9	31.5%	38	42.0%	10	26.4%
Lawrence	R	$473,524	0.7%	4	54.0%	21	8.8%	13	37.2%
Lewis	R	$31,885	0.0%	2	14.2%	2	5.7%	14	80.1%
Lincoln	R	$382,928	0.6%	11	25.8%	31	40.5%	12	33.8%
Loudon	R	$335,860	0.5%	7	26.2%	25	8.0%	12	65.8%
Macon	R	$363,184	0.5%	9	66.7%	27	7.1%	14	26.2%
Madison	U	$1,513,668	2.3%	18	18.1%	76	55.1%	19	26.8%
Marion	U	$196,069	0.3%	5	22.1%	16	6.4%	13	71.6%
Marshall	R	$370,655	0.6%	8	31.0%	20	8.0%	12	61.0%
Maury	R	$1,067,515	1.6%	12	38.9%	48	14.5%	16	46.6%
McMinn	R	$600,911	0.9%	9	27.5%	50	9.4%	20	63.1%
McNairy	R	$129,578	0.2%	1	1.0%	10	12.8%	11	86.3%
Meigs	R	$25,795	0.0%	0	0.0%	0	0.0%	16	100.0%
Monroe	R	$294,283	0.4%	5	19.9%	14	5.3%	14	74.8%
Montgomery	U	$604,815	0.9%	10	33.3%	50	13.3%	14	53.4%
Moore	R	$2,639	0.0%	0	0.0%	0	0.0%	7	100.0%
Morgan	R	$165,439	0.2%	7	69.7%	6	7.4%	13	22.9%
Obion	R	$200,026	0.3%	7	18.3%	26	30.7%	14	51.0%
Overton	R	$152,350	0.2%	3	1.7%	5	53.9%	10	44.4%
Perry	R	$107,834	0.2%	3	15.2%	4	2.5%	11	82.3%
Pickett	R	$75,088	0.1%	1	1.4%	2	69.0%	5	29.7%
Polk	R	$273,740	0.4%	5	46.1%	22	16.8%	10	37.1%
Putnam	R	$610,935	0.9%	9	6.7%	29	21.3%	24	72.0%

(continued)

Table 3-12. Lab Coverage by County: Tennessee (continued)

				Independent Labs		POLs and Other Labs		Hospital Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)	Number Serving County over $100 (Excl. G0001)	Share of Lab Allowed Charges in County (%)
Rhea	R	$249,254	0.4%	8	25.9%	13	13.5%	20	60.6%
Roane	R	$566,658	0.9%	11	37.5%	40	28.0%	16	34.5%
Robertson	U	$395,473	0.6%	12	34.1%	23	12.7%	12	53.2%
Rutherford	U	$739,203	1.1%	14	51.6%	55	20.9%	20	27.5%
Scott	R	$268,689	0.4%	4	24.4%	18	21.0%	15	54.6%
Sequatchie	U	$56,538	0.1%	2	18.1%	3	64.8%	7	17.1%
Sevier	U	$373,102	0.6%	8	22.1%	26	14.3%	12	63.6%
Shelby	U	$9,753,900	14.6%	40	38.0%	492	36.1%	30	26.0%
Smith	R	$308,285	0.5%	9	17.2%	24	15.9%	16	67.0%
Stewart	R	$38,077	0.1%	1	2.1%	1	4.9%	9	92.9%
Sullivan	U	$3,404,800	5.1%	20	43.6%	112	22.4%	20	34.0%
Sumner	U	$672,067	1.0%	18	24.7%	55	22.1%	23	53.3%
Tipton	U	$595,283	0.9%	11	18.5%	59	57.7%	11	23.8%
Trousdale	R	$53,939	0.1%	7	37.3%	5	5.8%	12	56.9%
Unicoi	U	$244,512	0.4%	3	27.4%	13	15.7%	6	56.9%
Union	U	$30,433	0.0%	3	15.8%	10	23.5%	7	60.7%
Van Buren	R	$23,663	0.0%	3	34.7%	1	5.2%	4	60.1%
Warren	R	$629,742	0.9%	17	30.9%	57	29.3%	13	39.8%
Washington	U	$2,224,338	3.3%	20	46.1%	114	30.5%	21	23.4%
Wayne	R	$111,764	0.2%	3	14.9%	5	8.7%	11	76.4%
Weakley	R	$348,973	0.5%	8	31.0%	23	42.4%	14	26.6%
White	R	$186,989	0.3%	4	36.8%	13	19.5%	12	43.7%
Williamson	U	$657,700	1.0%	11	25.5%	54	24.1%	22	50.4%
Wilson	U	$555,940	0.8%	12	49.1%	29	9.6%	21	41.3%
TN BEN & PERF[a]		$1,441,547	2.2%	37		206		91	
Total		$66,649,281			33.6%		28.9%		37.6%

[a] Some observations were missing information on referring providers. If the test was performed on a Tennessee beneficiary by a Tennessee lab, we assumed that the specimen was drawn in Tennessee. County was based on the referring provider's ZIP code for independent labs and "POL and Other Labs." Corresponding information was not available for hospitals. We assumed that specimens for patient tests at hospitals were drawn in the county where the hospital is located. We assumed that nonpatient hospital tests were drawn in the beneficiary's county.

Source: 1994 Lab and Outpatient SAF.

have more than one CLIA number and there is no automated method for linking such labs. Using a manual inspection of the CLIA Provider File, we linked Tennessee independent labs with common ownership. We did not repeat this process for POLs and other labs because of the large number of such labs.

We calculated the number of labs serving the county using two different methods. In the first method, we assumed that a lab that performed any test on a specimen drawn in that county served that county. Because it was common for labs to perform one or two tests in a given county, we used a stricter $100 minimum (excluding G0001, drawing blood for specimen) for a lab to be considered as serving the county. This method produced a much smaller, more realistic number of labs that served each county. For example, specimens drawn in Anderson County were sent to 35 different independent labs, 280 different POLs, and 28 different hospitals. However, when we excluded labs that performed less than $100 of tests in this county, these numbers fell to 10, 52, and 19, respectively. The number of labs reported in Table 3-12 is based on the stricter definition of coverage. The share of tests performed by each type of lab sums to 100 percent in any given county. For example, 21.9 percent of tests drawn in Bedford County are performed by independent labs, 6.7 percent are performed by POLs, and 71.5 percent are performed by hospitals.

The number of labs serving and independent lab shares varied widely among counties. Not surprisingly, the number of labs serving each county were closely related to allowed charges. Rural counties generally had low allowed charges, and consequently were served by fewer labs of all types than urban counties. However, as allowed charges increased, rural counties were served by increasing numbers of all types of labs.

The relationship between allowed charges and independent lab share was less clear. Eighteen counties had independent lab market shares of less than 15 percent; 17 of these counties were rural. On the other hand, 5 of the 7 counties where independent labs had more than 50 percent market share were rural.

Hospitals had large market shares in many rural counties. In part, this may reflect the importance of hospitals as the focus of health care services in many small rural counties. In addition, many rural beneficiaries may travel to urban areas to visit physicians.

The low numbers of labs—of all types—serving counties with low levels of allowed charges has important implications for the design of the demonstration project. Eight counties were served by zero or one independent lab, and eight counties were served by zero or one POL. Most of these counties had very low allowed charges. The lab design must address how to treat counties that are currently being served by few labs.

Tennessee Market Shares and Coverage Areas by Lab

Table 3-13 combines carrier data on independent labs and POLs and other labs and intermediary data on hospital Part B lab claims to rank the largest labs in Tennessee based on total Medicare Part B allowed charges. All labs with more than $100,000 in total allowed charges are shown. The table includes all procedures performed on specimens drawn in Tennessee.

The table also shows two alternative measures of geographic coverage for each lab. The first measure includes all counties served. The second measure requires labs to have more than a token presence in the county; for this measure, labs must have more than $100 worth of allowed charges in the county, excluding G0001 (drawing blood for specimens) procedures. Because of data limitations, the number of counties served is defined differently for independent labs and POLs than for hospital labs. For independent labs and POLs, the number of counties served is based on the county where the lab specimen is originally drawn. Unfortunately, the information necessary to apply this definition is not uniformly reported in the hospital data. Therefore, the number of counties served by hospitals is based on beneficiary location for nonpatient tests and the location of the hospital for patient tests.

Total allowed charges are calculated separately for each lab based on all charges and all carrier/nonpatient charges. Allowed charges for companies operating multiple labs are aggregated across labs and are updated to reflect current affiliations.

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab

The three largest lab companies received 23.6 percent of allowed on specimens drawn in Tennessee.

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
1	I	91	88	$6,996,255	$6,996,255	100.0%	$5,882,388	10.5%	10.7%	586,299	508,065
2	I	91	85	$5,936,251	$5,936,251	100.0%	$5,257,251	8.9%	9.6%	557,009	509,126
3	I	65	54	$2,800,564	$2,800,564	100.0%	$2,382,849	4.2%	4.3%	231,626	197,774
4	I	72	45	$1,748,761	$1,748,761	100.0%	$1,508,106	2.6%	2.8%	146,755	127,222
5	H	37	26	$1,233,493	$415,165	33.7%	$956,546	1.9%	1.7%	104,177	91,101
6	H	68	51	$981,211	$522,974	53.3%	$720,285	1.5%	1.3%	94,087	79,664
7	H	42	36	$980,517	$497,855	50.8%	$605,446	1.5%	1.1%	63,762	48,988
8	I	23	15	$867,849	$867,849	100.0%	$683,873	1.3%	1.2%	69,205	58,180
9	H	88	78	$853,607	$402,207	47.1%	$587,886	1.3%	1.1%	87,766	70,187
10	H	42	29	$791,677	$358,704	45.3%	$604,511	1.2%	1.1%	71,158	59,854
11	H	39	28	$676,242	$475,526	70.3%	$571,010	1.0%	1.0%	61,274	54,007
12	I	17	13	$651,165	$651,165	100.0%	$617,812	1.0%	1.1%	49,431	47,103
13	H	31	13	$643,804	$184,428	28.6%	$487,049	1.0%	0.9%	61,612	52,185
14	H	20	14	$542,997	$273,124	50.3%	$416,202	0.8%	0.8%	55,564	47,118
15	H	31	18	$538,008	$254,297	47.3%	$442,267	0.8%	0.8%	57,077	50,270
16	H	37	20	$494,302	$204,711	41.4%	$379,819	0.7%	0.7%	48,183	40,275
17	POL	20	12	$482,683	$482,683	100.0%	$448,437	0.7%	0.8%	52,598	50,040
18	H	62	48	$479,453	$154,032	32.1%	$359,433	0.7%	0.7%	61,303	53,951

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
19	H	22	17	$479,407	$230,223	48.0%	$312,403	0.7%	0.6%	44,912	33,977
20	H	36	26	$478,748	$288,461	60.3%	$368,269	0.7%	0.7%	43,664	36,282
21	H	27	12	$454,274	$46,560	10.2%	$265,186	0.7%	0.5%	43,010	32,091
22	H	34	29	$421,396	$227,039	53.9%	$309,857	0.6%	0.6%	34,118	28,108
23	H	28	17	$393,280	$159,005	40.4%	$276,090	0.6%	0.5%	32,643	25,675
24	I	14	8	$385,718	$385,718	100.0%	$317,617	0.6%	0.6%	30,457	25,453
25	H	42	23	$370,317	$163,002	44.0%	$281,468	0.6%	0.5%	37,841	33,718
26	H	23	10	$364,190	$85,571	23.5%	$276,410	0.5%	0.5%	42,645	34,673
27	H	14	9	$361,083	$218,275	60.5%	$307,737	0.5%	0.6%	42,942	39,135
28	I	29	27	$355,090	$355,090	100.0%	$327,348	0.5%	0.6%	39,863	37,013
29	I	8	4	$351,093	$351,093	100.0%	$239,484	0.5%	0.4%	28,216	22,208
30	H	29	22	$333,502	$80,869	24.2%	$240,122	0.5%	0.4%	35,358	29,558
31	H	7	4	$326,671	$32,510	10.0%	$224,953	0.5%	0.4%	36,590	30,324
32	H	41	25	$317,500	$220,554	69.5%	$267,787	0.5%	0.5%	28,767	25,275
33	H	19	13	$313,047	$119,999	38.3%	$254,396	0.5%	0.5%	32,423	28,664
34	H	13	9	$284,348	$20,505	7.2%	$201,393	0.4%	0.4%	31,188	25,317

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
35	H	36	23	$279,326	$89,380	32.0%	$183,799	0.4%	0.3%	26,832	20,789
36	H	21	18	$275,310	$192,739	70.0%	$233,649	0.4%	0.4%	27,275	24,223
37	H	22	12	$274,530	$170,292	62.0%	$211,822	0.4%	0.4%	32,199	27,190
38	POL	6	4	$274,198	$274,198	100.0%	$253,879	0.4%	0.5%	29,627	27,758
39	POL	23	10	$271,803	$271,803	100.0%	$267,581	0.4%	0.5%	21,009	20,714
40	H	23	14	$270,846	$165,653	61.2%	$217,423	0.4%	0.4%	25,684	21,819
41	H	13	5	$264,910	$98,452	37.2%	$180,396	0.4%	0.3%	25,746	20,621
42	POL	17	9	$263,091	$263,091	100.0%	$259,891	0.4%	0.5%	24,006	23,819
43	H	24	15	$254,759	$169,340	66.5%	$221,187	0.4%	0.4%	31,871	29,582
44	H	12	5	$251,490	$141,418	56.2%	$218,812	0.4%	0.4%	31,781	29,672
45	POL	28	17	$250,430	$250,430	100.0%	$248,378	0.4%	0.5%	22,078	21,944
46	H	14	7	$248,112	$14,032	5.7%	$192,897	0.4%	0.4%	24,813	21,882
47	H	10	6	$229,623	$112,866	49.2%	$179,155	0.3%	0.3%	26,684	22,427
48	H	33	15	$228,066	$158,437	69.5%	$190,307	0.3%	0.3%	22,153	19,636
49	H	27	12	$210,642	$88,357	41.9%	$182,001	0.3%	0.3%	22,059	19,925
50	H	15	12	$209,940	$117,410	55.9%	$176,503	0.3%	0.3%	24,577	22,094
51	H	19	14	$206,043	$118,579	57.6%	$170,111	0.3%	0.3%	21,196	18,324
52	POL	6	4	$200,518	$200,518	100.0%	$195,746	0.3%	0.4%	18,678	18,179
53	H	6	1	$198,482	$18,276	9.2%	$150,314	0.3%	0.3%	23,221	19,775

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
54	H	14	11	$196,693	$117,090	59.5%	$171,467	0.3%	0.3%	22,456	20,525
55	H	15	12	$190,655	$124,788	65.5%	$153,682	0.3%	0.3%	19,742	17,135
56	I	52	41	$189,658	$189,658	100.0%	$137,326	0.3%	0.3%	15,352	11,035
57	POL	10	6	$186,877	$186,877	100.0%	$185,523	0.3%	0.3%	19,647	19,450
58	H	15	10	$182,976	$92,437	50.5%	$147,255	0.3%	0.3%	17,437	15,185
59	POL	6	5	$180,624	$180,624	100.0%	$179,675	0.3%	0.3%	19,105	19,003
60	H	30	16	$178,367	$42,074	23.6%	$137,796	0.3%	0.3%	19,534	16,048
61	H	21	9	$176,977	$93,162	52.6%	$127,610	0.3%	0.2%	16,440	13,480
62	H	15	11	$176,748	$89,123	50.4%	$148,414	0.3%	0.3%	23,285	21,279
63	I	2	1	$173,174	$173,174	100.0%	$170,710	0.3%	0.3%	20,929	20,691
64	H	24	10	$168,414	$58,140	34.5%	$128,046	0.3%	0.2%	15,040	12,562
65	H	17	10	$162,867	$106,249	65.2%	$135,734	0.2%	0.2%	17,411	15,379
66	H	17	8	$162,040	$69,741	43.0%	$109,689	0.2%	0.2%	13,549	10,621
67	H	12	6	$160,824	$68,730	42.7%	$124,030	0.2%	0.2%	15,573	13,331
68	H	22	10	$159,378	$78,948	49.5%	$129,141	0.2%	0.2%	14,884	12,735
69	H	28	10	$158,990	$13,540	8.5%	$93,324	0.2%	0.2%	16,177	13,484

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
70	H	15	8	$156,040	$70,352	45.1%	$122,124	0.2%	0.2%	15,395	13,226
71	H	15	9	$155,463	$44,792	28.8%	$118,247	0.2%	0.2%	17,207	14,775
72	H	8	3	$153,695	$40,007	26.0%	$118,173	0.2%	0.2%	15,353	12,661
73	H	18	8	$153,519	$81,938	53.4%	$124,383	0.2%	0.2%	17,787	15,524
74	POL	4	1	$153,512	$153,512	100.0%	$152,959	0.2%	0.3%	15,472	15,387
75	I	18	17	$152,537	$152,537	100.0%	$0	0.2%	0.0%	423	0
76	POL	6	3	$152,198	$152,198	100.0%	$151,117	0.2%	0.3%	15,841	15,751
77	POL	19	16	$148,147	$148,147	100.0%	$139,415	0.2%	0.3%	13,154	12,595
78	POL	1	1	$148,043	$148,043	100.0%	$140,646	0.2%	0.3%	15,187	14,420
79	I	30	16	$145,241	$145,241	100.0%	$115,913	0.2%	0.2%	14,654	11,679
80	H	14	7	$144,304	$2,201	1.5%	$67,519	0.2%	0.1%	10,379	6,807
81	POL	42	33	$143,991	$143,991	100.0%	$133,478	0.2%	0.2%	13,026	12,770
82	H	17	8	$143,648	$86,248	60.0%	$121,234	0.2%	0.2%	14,987	13,257
83	H	9	6	$140,943	$69,349	49.2%	$100,994	0.2%	0.2%	12,313	9,839
84	H	7	4	$138,895	$47,819	34.4%	$117,799	0.2%	0.2%	13,764	12,317
85	POL	7	7	$138,487	$138,487	100.0%	$138,349	0.2%	0.3%	13,925	13,882
86	H	10	5	$137,565	$60,768	44.2%	$105,765	0.2%	0.2%	12,726	10,794
87	H	11	8	$135,936	$90,596	66.6%	$116,971	0.2%	0.2%	13,003	11,746
88	H	11	6	$135,870	$82,425	60.7%	$112,514	0.2%	0.2%	14,231	12,596

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
89	I	16	9	$135,581	$135,581	100.0%	$125,225	0.2%	0.2%	10,988	10,438
90	H	14	12	$134,079	$103,105	76.9%	$106,512	0.2%	0.2%	11,385	9,586
91	POL	8	7	$131,967	$131,967	100.0%	$124,516	0.2%	0.2%	11,732	11,515
92	H	13	8	$131,741	$56,807	43.1%	$100,278	0.2%	0.2%	11,817	9,737
93	POL	2	2	$130,205	$130,205	100.0%	$125,487	0.2%	0.2%	12,439	12,102
94	POL	4	1	$129,273	$129,273	100.0%	$128,062	0.2%	0.2%	14,420	13,823
95	POL	2	2	$128,949	$128,949	100.0%	$127,738	0.2%	0.2%	11,474	11,374
96	H	17	12	$127,665	$48,078	37.7%	$93,187	0.2%	0.2%	10,895	8,812
97	H	15	10	$126,519	$83,678	66.1%	$110,785	0.2%	0.2%	13,310	12,227
98	POL	2	1	$125,242	$125,242	100.0%	$124,926	0.2%	0.2%	11,385	11,335
99	POL	4	3	$124,533	$124,533	100.0%	$123,984	0.2%	0.2%	14,948	14,841
100	POL	11	3	$123,357	$123,357	100.0%	$113,834	0.2%	0.2%	9,914	9,702
101	H	18	10	$122,619	$20,016	16.3%	$78,325	0.2%	0.1%	11,201	8,229
102	H	16	8	$121,485	$49,341	40.6%	$90,797	0.2%	0.2%	12,126	10,196
103	H	13	6	$121,228	$48,953	40.4%	$99,511	0.2%	0.2%	12,792	11,225
104	POL	59	32	$120,547	$120,547	100.0%	$3,354	0.2%	0.0%	7,945	206
105	POL	7	3	$119,290	$119,290	100.0%	$112,666	0.2%	0.2%	11,493	11,073

(continued)

Table 3-13. Tennessee Market Shares and Coverage Areas by Lab (continued)

Facility Name	Type	Counties Served	Counties Served over $100 (Excl. G0001)	Total Allowed Charges	Carrier and Nonpatient Charges	Percent Carrier and Nonpatient Charges	Total Allowed Charges (Demo Tests)	Share of All Allowed Charges	Share of Demo Allowed Charges	Number of Tests Performed	Number of Demo Tests Performed
106	H	10	5	$116,896	$52,756	45.1%	$95,943	0.2%	0.2%	13,847	12,434
107	H	18	16	$115,118	$12,010	10.4%	$84,654	0.2%	0.2%	9,806	8,054
108	H	13	7	$112,956	$59,748	52.9%	$88,395	0.2%	0.2%	11,621	10,037
109	H	13	7	$112,588	$43,936	39.0%	$85,462	0.2%	0.2%	12,692	10,940
110	H	24	11	$111,669	$24,523	22.0%	$88,566	0.2%	0.2%	10,211	8,921
111	POL	28	19	$109,291	$109,291	100.0%	$98,591	0.2%	0.2%	10,121	9,790
112	H	11	5	$108,659	$30,894	28.4%	$80,608	0.2%	0.1%	10,045	7,932
113	H	21	13	$106,535	$70,605	66.3%	$81,096	0.2%	0.1%	9,750	8,218
114	POL	3	3	$105,422	$105,422	100.0%	$73,150	0.2%	0.1%	7,109	6,127
115	H	14	6	$104,874	$55,111	52.5%	$92,660	0.2%	0.2%	10,655	9,913
116	H	15	7	$104,010	$22,631	21.8%	$80,068	0.2%	0.1%	12,622	10,567
117	I	20	15	$102,300	$102,300	100.0%	$87,240	0.2%	0.2%	8,627	7,849
118	H	10	7	$100,134	$28,655	28.6%	$76,508	0.2%	0.1%	9,283	7,851
Total ($100,000 cutoff)				$48,913,108				73.4%	73.2%		
Total ($200,000 cutoff)				$39,566,598				59.4%	59.4%		
All Labs				$66,649,281							

Source: 1994 Lab and Outpatient SAFs.

Although we do not identify the labs in Table 3-13, we note that the Big Three independent labs nationwide also accounted for the top three market shares in Tennessee. In 1994, the Big Three accounted for almost $16 million and $13.5 million in total and demonstration allowed charges, respectively. This $13.5 million accounted for over 75 percent of the allowed charges for all demonstration tests conducted by independent labs and over 20 percent of all demonstration tests conducted in Tennessee. The nine independent labs with over $200,000 in allowed charges accounted for over 31 percent of all demonstration tests and 91 percent of independent lab tests.

In contrast, hospital laboratories are less concentrated than independent labs. Thirty-seven hospital labs attained more than $200,000 in total allowed charges. These hospitals accounted for 65 percent of all hospital allowed charges for all demonstration tests conducted in 1994. However, if we focus only on nonpatient charges, only 14 hospitals had more than $200,000 in nonpatient charges. These hospitals accounted for almost 90 percent of all hospital nonpatient charges and about 14 percent of total allowed charges for all labs. For the most part, the breadth of regional coverage by hospitals is similar to independent labs of similar size, although this conclusion must be qualified because coverage areas are defined differently for the two types of labs.

As expected, very few POLs had more than $200,000 in allowed charges. The POLs that meet the $200,000 cutoff accounted for less than 5 percent of total allowed charges. The largest POL, performed over $100 worth of tests in only 12 counties, and another POL performed over $100 worth of tests in 17 counties. The other POLs that attained the $200,000 cutoff performed more than $100 of tests in fewer than 10 counties.

Implications

These results have important implications for the design of the demonstration project.

- The leading market shares of several large independent labs justify focusing on these labs when setting up the demonstration.
- The high market shares of hospitals, collectively and individually, suggests that hospital labs should be seriously considered for inclusion in the demonstration.

- Although relatively few POLs had over $100,000 in allowed charges, it may still make sense to include the largest of these in the demonstration. These labs mostly perform demonstration tests.
- The county coverage in 1994 suggests that the demonstration project should be designed so that bidding labs do not have to commit to providing statewide coverage. The top two labs provided statewide coverage in 1994. The next two labs would have had to add coverage to about one-third of the counties in the state to provide statewide coverage. The remaining labs would have had even more difficulty providing statewide coverage. If statewide coverage were required for the demonstration, these labs probably would have to form alliances or networks with other labs in order to form bidding coalitions.

Non-Medicare Business

Market shares calculated from the Lab and Outpatient SAFs are especially useful because they account for specimen origin. However, these market shares are only based on Medicare claims. Market shares based on Medicare and non-Medicare volume can be calculated from the CLIA Provider File. But there is a tradeoff: the CLIA Provider File contains no information on patient origins. Thus, market shares calculated from the file are based on lab location.

Based on the CLIA file, Table 3-14 shows the shares for each of the major lab sectors in Tennessee in 1996. The distribution of nonwaived tests across sectors was fairly close to the national distribution (see Table 2-1 in Chapter 2).

Table 3-15 shows independent lab market shares in selected states based on lab location and nonwaived test volume data from the 1996 CLIA Provider File. One advantage of this dataset is its inclusion of volume data from both Medicare and non-Medicare patients. On the negative side, the public use CLIA Provider File provides no systematic way to identify all labs owned by a single company. To overcome this limitation, we manually matched affiliated CLIA provider numbers between independent labs within each state. We only performed the matching for independent labs, due to the large number of other labs in each state. Because of the effort involved in matching, we limited our analysis to Tennessee, North Carolina, and all states bordering Tennessee.

Table 3-14. Number of CLIA-Certified Facilities and Test Volume in Tennessee, by Lab Type

Although POLs are more numerous, hospital and independent labs provide the bulk of nonwaived tests, which are more complex than waived tests.

		Number of Tests (Millions)			Share (%)		
Type of Facility	Number of Facilities	Nonwaived	Waived	Total	Nonwaived	Waived	Total
Hospital	185	61.9	2.9	64.8	55.7	31.8	53.8
Independent Lab	85	24.7	<1.0	24.7	22.2	0.3	20.5
POL	1,910	12.1	3.0	15.0	10.8	32.4	12.5
Other	1,051	12.6	3.3	15.9	11.3	35.6	13.2
Total	3,231	111.2	9.3	120.5	100.0%	100.0%[a]	100.0%

[a] May not sum to 100 percent due to rounding.

Source: 1996 CLIA Provider File.

Table 3-15 Independent Lab Market Shares Based on CLIA Provider File Test Volume
Although CLIA Provider File data include Medicare and non-Medicare volume, the resulting market shares are based on lab location, not specimen origin.

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Alabama				
Alabama Reference	5	86,278,555	90.4%	53.5%
LabCorp	20	4,314,464	4.5%	2.7%
SmithKline Beecham	11	1,767,737	1.9%	1.1%
Labsouth	5	1,343,859	1.4%	0.8%
Other Labs	48	1,773,874	1.9%	1.1%
Total		95,478,489		59.2%
Total All Labs		161,361,927		
Arkansas				
Accu-Path Medical Laboratory Inc.	1	992,502	26.3%	2.6%
Corning Clinical	4	939,524	24.9%	2.4%
Arkansas Medical Lab Inc.	3	652,151	17.3%	1.7%
LabCorp	10	306,745	8.1%	0.8%
Little Rock Internal Medicine Clinic	3	176,416	4.7%	0.5%
Fort Smith Medical Laboratory	3	115,926	3.1%	0.3%
Drs. McConnell, McKinney, Sturdivant, Birk	1	95,000	2.5%	0.2%
Diagnostic Center, The	1	81,540	2.2%	0.2%
Doctors Anatomic Pathology Service PA	4	72,512	1.9%	0.2%
Family Practice Independent Lab, The	1	59,185	1.6%	0.2%
South Arkansas Diagnostic Clinic Lab	1	54,329	1.4%	0.1%
Outpatient Diagnostic Center PA	1	41,418	1.1%	0.1%
Other Labs	15	186090	4.9%	0.5%
Total		3,773,338		9.7%
Total All Labs		38,770,206		
Georgia				
SmithKline Beecham	20	28,009,439	68.1%	18.2%
Corning Clinical	2	5,025,845	12.2%	3.3%
Doctors Laboratory Inc.	13	3,959,928	9.6%	2.6%

(continued)

Table 3-15. Independent Market Shares Based on CLIA Provider File Test Volume (continued)

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Georgia (continued)				
Quintiles Laboratories Ltd	1	1,010,000	2.5%	0.7%
Carroll Medical Labs	5	605,367	1.5%	0.4%
Mullins Pathology & Cytology	1	541,045	1.3%	0.4%
Other Labs	97	1,958,656	4.8%	1.3%
Total Independent Labs		41,110,280		26.7%
Total All Labs		153,734,864		
Kentucky				
LabCorp	11	39,550,410	85.4%	41.3%
SmithKline Beecham	4	2,361,150	5.1%	2.5%
Appalachian Reg HealthCare Consol Lab	1	1,221,210	2.6%	1.3%
Medical Research Laboratories	1	625,456	1.4%	0.7%
Other Labs	58	2,542,244	5.5%	2.7%
Total Independent Labs		46,300,470		48.4%
Total All Labs		95,660,865		
Mississippi				
LabCorp	7	3,690,313	40.0%	7.3%
Puckett Group PA	4	3,002,375	32.6%	6.0%
Medical Pathology Laboratory Ltd	10	1,340,233	14.5%	2.7%
Natchez Pathology Laboratory Inc.	1	264,282	2.9%	0.5%
Clinical Pathology Lab	3	229,601	2.5%	0.5%
South Coast Pathology Laboratory	1	220,300	2.4%	0.4%
Central Mississippi Clinical Lab	4	101,650	1.1%	0.2%
Other Labs	28	370,930	4.0%	0.7%
Total Independent Labs		9,219,684		18.3%
Total All Labs		50,286,744		

(continued)

Table 3-15. Independent Market Shares Based on CLIA Provider File Test Volume (continued)

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Missouri				
Corning Clinical	4	16,735,096	46.7%	12.1%
LabCorp	5	8,185,462	22.8%	5.9%
SmithKline Beecham	9	5,549,370	15.5%	4.0%
Community Blood Center	1	869,895	2.4%	0.6%
Boyce And Bynum Pathology Laboratories	7	790,202	2.2%	0.6%
Washington University	2	614,538	1.7%	0.4%
Medical Arts Laboratory	2	439,056	1.2%	0.3%
D C I Laboratory	1	370,258	1.0%	0.3%
Gamma Laboratories Inc.	2	363,867	1.0%	0.3%
Other Labs	58	1,931,994	5.4%	1.4%
Total Independent Labs		35,849,738		25.9%
Total All Labs		138,304,677		
North Carolina				
LabCorp	46	41,302,124	90.7%	28.0%
Compuchem Laboratories Inc.	1	2,000,000	4.4%	1.4%
Other Labs	45	2,247,282	4.9%	1.5%
Total Independent Labs		45,549,406		30.9%
Total All Labs		147,638,868		
Tennessee				
LabCorp	13	7,322,690	29.6%	6.6%
Baptist Regional Laboratories	5	5,205,260	21.1%	4.7%
Corning Clinical	2	4,151,000	16.8%	3.7%
SmithKline Beecham	5	2,865,216	11.6%	2.6%
Dialysis Clinic Inc.	3	2,449,189	9.9%	2.2%
Memphis Clinical Laboratory Inc.	1	476,700	1.9%	0.4%
National Psychopharmachology Lab	1	420,000	1.7%	0.4%
Other Labs	55	1,812,198	7.3%	1.6%
Total Independent Labs		24,702,253		22.2%
Total All Labs		111,157,059		

(continued)

Table 3-15. Independent Market Shares Based on CLIA Provider File Test Volume (continued)

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Virginia				
LabCorp	39	51,813,528	77.1%	33.5%
American Medical Labs Inc.	2	12,913,350	19.2%	8.4%
Medical Laboratories Of Virginia Inc.	4	727,788	1.1%	0.5%
Other Labs	58	1,734,699	2.6%	1.1%
Total Independent Labs		67,189,365		43.5%
Total All Labs		154,576,206		

Source: 1996 CLIA Provider File.

Table 3-15 shows that the independent lab sector can be quite concentrated in some states. Independent lab companies with market shares of one percent or more are shown. The shares of independent lab tests for the single dominant labs in Alabama, Georgia, Kentucky, North Carolina, and Virginia all exceeded 65 percent. By comparison, markets in Arkansas, Missouri, Mississippi, and Tennessee, appeared more competitive.

The Big Three lab companies had a notable presence in the market shares for each state. At least one of the Big Three companies had the highest or second highest market share in each state. However, regional lab companies had sizable market shares in Alabama, Arkansas, Mississippi, Tennessee, and Virginia.

Finally, it should be noted that the markets appeared much less concentrated when the entire lab market, rather than the independent lab sector alone, was considered. In Tennessee, for example, the market share of the leading independent lab equaled 29.6 percent of independent lab tests, but only 6.6 percent of all lab tests in the state. This example emphasizes the dangers of focusing solely on market share within the independent lab industry.

3.1.4 The Memphis Market

In Memphis, the lab company with the largest market share is affiliated with a regional hospital system, rather than one of the Big Three labs (Table 3-16, which is based on carrier data only). The

Table 3-16. Memphis Market Shares
The independent lab with the largest market share in the Memphis area was affiliated with a regional hospital system.

Shelby and Tipton County Labname	Sum of Allowed Charges ($)	Market Share (%)
Lab 1	1,433,361	17.82
Lab 2	683,102	8.59
Lab 3	511,938	6.01
Lab 4	357,531	4.58
Lab 5	340,860	4.37
Lab 6	221,931	2.85
Lab 7	173,134	2.22
Lab 8	169,047	2.17
Lab 9	130,769	1.68
Lab 10	129,256	1.66
Lab 11	128,733	1.65
Lab 12	125,191	1.61
Lab 13	122,303	1.57
Lab 14	114,598	1.47
Lab 15	89,048	1.14
Lab 16	77,863	1.00
Lab 17	76,875	0.99
Lab 18	75,895	0.97
Total for the Counties	$7,798,128	

Source: 1994 Lab SAF.

entire health care sector in Memphis and surrounding areas of Tennessee, Arkansas, and Mississippi is dominated by two very large hospital systems and most physicians in the area are affiliated with one or both hospitals systems.

One of the hospital systems has set up two independent labs to complement its hospital labs. According to the labs' manager, the labs must compete for physicians' business like other labs on the basis of price and service, although some physicians affiliated with the system may have a natural preference for using affiliated labs.

Based on our discussions with LTAC members, the close affiliation between the Memphis independent labs and hospital systems is not uncommon. For example, the fifth-largest independent lab company in 1994, Physicians Clinical Laboratories, had its origins servicing several hospitals in Sacramento, California. System affiliation may be an effective strategy for regional labs competing against the Big Three.

3.1.5 Medicare Part B Clinical Lab Test Trends

Because of the volume of claims data, we only analyzed the Tennessee Lab SAF extract for one year. Consequently, we could not use the extracts to track lab trends. Trends based on the Physician/Supplier Procedure Summary Files can be analyzed as long as the limitations of that dataset, as discussed earlier in this report, are recognized. In particular, the Physician/Supplier Procedure Summary File is organized by carrier, rather than by either specimen, beneficiary, or specimen location. Thus, it is difficult to compare results from the file to results shown earlier in this section that are based on the Lab SAF. The file also does not contain data on hospital Part B claims. Nonetheless, the results do provide useful information about trends over time and comparisons to national trends.

Table 3-17 shows volume and allowed and submitted charges for all Medicare Part B lab claims in Tennessee in 1992 to 1994. To highlight the trends over time, the data are not adjusted to account for interstate transport of claims (see Table 3-18).

Table 3-17. Part B Lab Tests Excluding Hospital Outpatient Labs, Tennessee (Unadjusted)
Trends in Tennessee largely mirrored national trends during the period.

	1994	1993	1992
Volume (millions)	5.5	5.6	5.5
Allowed ($ millions)	$47.4	$49.3	$45.3
Submitted ($ millions)	$107.5	$103.5	$95.4

Source: Physician/Supplier Procedure Summary File, 1992-1994.

The trends in Tennessee largely mirrored national trends (see Table 2-10). Volume remained virtually unchanged between 1992 and 1994, while allowed charges dipped slightly in 1994 after a modest increase in 1993.

Table 3-18. Part B Lab Tests Excluding Hospital Outpatient Labs, Tennessee (Adjusted)
Once SmithKline Beecham and Roche claims were appropriately reassigned to Tennessee, volume and allowed charges increase significantly.

	1994[a]	1993	1992
Volume (millions)	6.2	6.6	6.3
Allowed ($ millions)	$55.6	$60.8	$54.5
Submitted ($ millions)	$129.7	$129.9	$116.7

[a] Roche claims in Tennessee could not be identified in 1994.

Source: Physician/Supplier Procedure Summary File, 1992-1994.

As discussed earlier in this report, Delaware Blue Shield and CIGNA North Carolina processed significant numbers of lab claims for SmithKline Beecham and Roche labs in Tennessee, respectively, in 1994. To provide a more accurate measure of the volume and allowed and submitted charges for Tennessee, we reassigned these claims to Tennessee. The adjustment is described in Section 2.3; note, however, that the information necessary to reassign Roche claims was not available in 1994. Because Roche had a significant presence in the state, the 1994 figures are not comparable to the earlier years. Focusing then on 1992 and 1993, the adjustment significantly increases the lab volume and allowed charges for Tennessee (Table 3-18).

Table 3-19 shows trends in the independent lab sectors' market shares of volume and charges in Tennessee, based on unadjusted data. The unadjusted market share is lower than the national average, as expected, because the SmithKline Beecham and Roche independent lab claims are excluded. Although the increase in independent labs' share of volume and allowed charges in 1993 mirrored the national trend, the trend did not continue in 1994, as it did nationally.

Table 3-20 shows adjusted levels of independent lab volume and allowed charges that account for SmithKline Beecham and Roche claims; the adjustments are most meaningful for 1992 and 1993 because Roche claims could not be reassigned in 1994.

Table 3-19. Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, Tennessee (Unadjusted)
The increase in independent lab shares of volume and charges in 1993 mirrored national trends; the decrease in 1994 did not.

		1994	1993	1992
Volume	(millions)	2.1	2.3	2.1
	%	38.1%	40.5%	38.3%
Allowed	($ millions)	$24.3	$26.3	$23.2
	%	51.2%	53.3%	51.3%
Submitted	($ millions)	$55.2	$53.8	$46.9
	%	51.4%	52.0%	49.1%

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Table 3-20. Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, Tennessee (Adjusted)
After reassigning SmithKline Beecham and Roche claims to Tennessee appropriately, independent lab shares of volume and charges were much closer to national averages.

		1994[a]	1993	1992
Volume	(millions)	2.8	3.3	2.9
	%	45.8%	49.7%	46.3%
Allowed	($ millions)	$32.5	$37.8	$32.5
	%	58.4%	62.1%	59.6%
Submitted	($ millions)	$77.4	$80.2	$68.2
	%	59.7%	79.2%	58.4%

[a] Roche claims in Tennessee could not be identified in 1994.

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Independent labs accounted for about 50 percent of volume and 62 percent of allowed charges in 1993, much closer to the national average than the unadjusted data suggest (see Table 2-11). As with the national data, independent labs in Tennessee accounted for a higher share of allowed charges than volume. Between 1992 and 1993, independent labs' share of volume and allowed charges increased, following the national trends.

3.1.6 Part B Clinical Lab Tests in Tennessee Hospitals

Although lab tests performed by hospital outpatient labs are reimbursed under the Medicare Part B program, claims for the tests are actually processed by Medicare Part A fiscal intermediaries. Consequently, data on outpatient lab tests are not contained in the same data sets as data on tests performed by independent labs and POLs. Because the magnitude of outpatient testing has important implications for the demonstration project, we conducted in-depth analyses of outpatient lab claims data for Tennessee.

The data set for this analysis was the 1994 Outpatient 100% Standard Analytic File (Outpatient SAF). This file includes complete data for all outpatient claims processed by Medicare Part A fiscal intermediaries. We limited our analysis to outpatient claims filed by Tennessee facilities that included at least one of the lab procedure codes specified in Section 1.3.

We further divided claims that met this criteria into "patient" and "nonpatient" lab claims. Patient lab claims are incurred by individuals who are registered outpatients at the hospital, including acutely ill persons who enter the hospital's emergency room or persons who come to the hospital to receive scheduled care on an outpatient basis. Nonpatient lab claims are incurred by individuals who never physically enter the hospital. The hospital lab performs tests on the nonpatient's specimen, but the nonpatient never actually visits the hospital. Hospitals sometimes refer to nonpatient lab testing as outreach testing.

The distinction between patient and nonpatient lab testing may be important for the design of the lab demonstration project. Nonpatient lab tests are likely to be quite similar in complexity and required turnaround to tests performed by independent labs. Consequently, it may be reasonable to use the fee schedule determined by competitive bidding to reimburse hospitals for nonpatient tests. Hospitals performing significant amounts of nonpatient testing might also be required to bid in the demonstration project. Patient lab tests, in contrast, may be delivered more as a by-product of the hospital's regular outpatient workload; many of these tests may also be performed on acutely ill patients who need test results on a stat basis.

We classified patient and nonpatient lab claims by reviewing all procedures included on each outpatient claim. If only lab procedures were included on the outpatient claim, we classified the entire claim as a nonpatient lab claim. If non-lab procedures were included, we classified the entire claim as a patient lab claim. For each type of claim, we then calculated the number of lab procedures and the allowed and submitted charges for lab procedures only. The Outpatient SAF does not include an allowed charge variable. To calculate allowed charges for each procedure, we multiplied the unit count for each lab procedure by its revenue center rate amount. The latter variable generally equaled the Tennessee Medicare fee schedule. Submitted charges were set equal to the revenue center total charge amount for each lab procedure.

Results of the analysis are shown in Table 3-21. About 2.6 million Medicare Part B lab procedures were performed in outpatient labs in Tennessee in 1994. Slightly under half of these were performed on nonpatients. Nonpatient lab procedures also accounted for $11.7 million of the $25.8 million in allowed charges paid outpatient labs in 1994. Outpatient lab allowed charges equaled about 27 percent of submitted lab charges.

Table 3-21. Outpatient Hospital Lab Tests in Tennessee
Nonpatient tests accounted for about 25 percent of outpatient test volume and allowed charges in Tennessee in 1994.

		Nonpatient	Patient	Total
Volume	(millions)	1.2	1.4	2.6
	%	46.1%	53.9%	100.0%
Allowed	($ millions)	$11.7	$14.1	$25.8
	%	45.4%	54.6%	100.0%
Submitted	($ millions)	$35.8	$57.8	$93.6
	%	38.2%	61.8%	100.0%

Source: 1994 Outpatient SAF.

An important question related to outpatient testing is whether outpatient labs are a significant source of Medicare Part B testing. To address this question, we compared the overall Tennessee Part B market shares for the hospital outpatient, independent, and POL and other lab sectors. The market shares are based on allowed charges. Total Part B allowed charges were calculated by summing allowed charges for specimens drawn in Tennessee from the Lab SAF with allowed charges for Tennessee outpatient facilities from the Outpatient SAF. Because the Outpatient SAF does not include a referring physician variable, we could not precisely identify where specimens included in that data set were drawn. In the absence of this variable, we assumed that patient tests were drawn at the hospital, while nonpatient tests were drawn in the county where the beneficiary lived. As a results of the latter assumption, about $0.7 million in nonpatient allowed charges were excluded from the analysis because the beneficiaries lived outside Tennessee.

Two market share calculations are shown in Table 3-22. The first includes all outpatient testing. Based on this estimate, outpatient labs accounted for about 37.6 percent of all Part B testing in Tennessee, with 16.5 percentage points coming from nonpatient testing and 21.1 percentage points coming from patient testing. Independent labs and POLs (and others) split the remainder of the market, with independent labs having a slightly larger market share.

Table 3-22. Tennessee Part B Allowed Charges and Market Shares by Lab Sector
Outpatient labs accounted for about one-fourth of total Medicare Part B lab allowed charges in Tennessee.

	Outpatient Labs				
	Nonpatient	Patient	Independent Labs	POLs and Others	All Labs[a]
Includes All Outpatient Lab Tests					
Allowed charges ($ million)	$11.0	$14.1	$22.4	$19.3	$66.6
Share (%)	16.5%	21.1%	33.6%	28.9%	100.0%
Excludes Outpatient Patient Testing					
Allowed charges ($ million)	$11.0	—	$22.4	$19.3	$52.6
Share (%)	20.9%	—	42.5%	36.6%	100.0%

[a] Numbers may not sum due to rounding.
Source: 1994 Lab SAF; 1994 Outpatient SAF.

The second market share calculation recognizes the similarity between nonpatient testing and tests performed in independent labs and POLs by excluding outpatient patient testing from the calculation. Nonpatient testing accounted for about 21 percent of the market defined in this manner, while the market shares for independent labs and POLs rose to 42 and 37 percent respectively.

Nonpatient versus Patient Tests

If hospital Part B lab tests are included in the demonstration, whether to include both nonpatient and patient tests or only nonpatient tests is an important question for the design of the demonstration.

Table 3-23 provides information on the shares of nonpatient and patient tests at hospitals meeting the $100,000 allowed charges threshold. Columns 1 and 2 display the hospitals and allowed charges listed in descending order of allowed charges.

Column 3 shows the number of counties the hospital served. Column 4 shows the number of counties the hospital served with over $100 in allowed charges, excluding charges for procedure G0001. Columns 3 and 4 can be used to determine how wide a geographic area the hospital covered. Column 4 is probably more useful because it shows the number of counties in which the hospital played a significant role. Hospitals that serve only a few counties with over $100 in allowed charges should not be expected to cover a large geographic area in the demonstration. Unlike carrier data, which consistently report the location of a referring physician, the hospital data do not consistently report information on where specimens are drawn. Therefore, our county coverage share calculations for nonpatients were based on the county in which the beneficiary is located; however, the share calculations for outpatient tests were based on the county in which the hospital is located. There were several hospitals that served only a few counties with over $100 in allowed charges; for example, one hospital served only one county, another served only three counties, and two counties served only four counties.

The final six columns in Table 3-23 display information for each hospital broken down into nonpatient and outpatient categories. This information includes total allowed charges for the hospital, share of allowed charges, and share of demonstration tests at the hospital.

Table 3-23. Share of Nonpatient and Patient Tests at Hospital Labs

Nonpatient test share varied widely between hospitals.

				Nonpatient Tests			Patient Tests			
Facility Name	Total Allowed Charges	Number of Counties Served	Counties Served over $100 (Excl. G0001)	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Nonpatient Share Minus Patient Share of Demo Tests
1	$1,233,493	37	26	$415,165	33.7%	86.3%	$818,328	66.3%	88.0%	–1.8%
2	$981,211	68	51	$522,974	53.3%	87.5%	$458,237	46.7%	82.0%	5.5%
3	$980,517	42	36	$497,855	50.8%	76.7%	$482,662	49.2%	77.0%	–0.3%
4	$853,607	88	78	$402,207	47.1%	79.6%	$451,399	52.9%	80.3%	–0.6%
5	$791,677	42	29	$358,704	45.3%	84.8%	$432,973	54.7%	83.6%	1.2%
6	$676,242	39	28	$475,526	70.3%	90.5%	$200,716	29.7%	82.2%	8.3%
7	$643,804	31	13	$184,428	28.6%	83.5%	$459,376	71.4%	85.1%	–1.6%
8	$542,997	20	14	$273,124	50.3%	83.3%	$269,873	49.7%	86.4%	–3.0%
9	$538,008	31	18	$254,297	47.3%	90.4%	$283,711	52.7%	86.1%	4.2%
10	$494,302	37	20	$204,711	41.4%	83.8%	$289,591	58.6%	83.4%	0.4%
11	$479,453	62	48	$154,032	32.1%	89.9%	$325,421	67.9%	87.3%	2.6%
12	$479,407	22	17	$230,223	48.0%	81.3%	$249,184	52.0%	70.0%	11.4%
13	$478,748	36	26	$288,461	60.3%	85.5%	$190,287	39.7%	79.2%	6.3%
14	$454,274	27	12	$46,560	10.2%	56.1%	$407,714	89.8%	77.2%	–21.1%
15	$421,396	34	29	$227,039	53.9%	82.6%	$194,357	46.1%	82.1%	0.5%
16	$393,280	28	17	$159,005	40.4%	79.6%	$234,275	59.6%	78.0%	1.6%

(continued)

Table 3-23. Share of Nonpatient and Patient Tests at Hospital Labs (continued)

				Nonpatient Tests			Patient Tests			
Facility Name	Total Allowed Charges	Number of Counties Served	Counties Served over $100 (Excl. G0001)	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Nonpatient Share Minus Patient Share of Demo Tests
17	$370,317	42	23	$163,002	44.0%	93.4%	$207,316	56.0%	85.0%	8.4%
18	$364,190	23	10	$85,571	23.5%	76.4%	$278,619	76.5%	82.7%	–6.3%
19	$361,083	14	9	$218,275	60.5%	92.9%	$142,808	39.6%	88.0%	5.0%
20	$333,502	29	22	$80,869	24.2%	85.4%	$252,633	75.8%	82.9%	2.6%
21	$326,671	7	4	$32,510	10.0%	89.2%	$294,161	90.0%	82.1%	7.1%
22	$317,500	41	25	$220,554	69.5%	90.1%	$96,947	30.5%	83.3%	6.8%
23	$313,047	19	13	$119,999	38.3%	89.3%	$193,049	61.7%	87.8%	1.5%
24	$284,348	13	9	$20,505	7.2%	96.2%	$263,843	92.8%	79.9%	16.4%
25	$279,326	36	23	$89,380	32.0%	75.7%	$189,946	68.0%	78.4%	–2.7%
26	$275,310	21	18	$192,739	70.0%	89.3%	$82,571	30.0%	87.7%	1.7%
27	$274,530	22	12	$170,292	62.0%	86.2%	$104,238	38.0%	81.6%	4.6%
28	$270,846	23	14	$165,653	61.2%	86.4%	$105,193	38.8%	82.7%	3.7%
29	$264,910	13	5	$98,452	37.2%	89.2%	$166,458	62.8%	74.2%	15.1%
30	$254,759	24	15	$169,340	66.5%	95.4%	$85,419	33.5%	87.4%	8.0%
31	$251,490	12	5	$141,418	56.2%	95.3%	$110,071	43.8%	89.7%	5.6%

(continued)

Table 3-23. Share of Nonpatient and Patient Tests at Hospital Labs (continued)

				Nonpatient Tests			Patient Tests			
Facility Name	Total Allowed Charges	Number of Counties Served	Counties Served over $100 (Excl. G0001)	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Nonpatient Share Minus Patient Share of Demo Tests
32	$248,112	14	7	$14,032	5.7%	84.6%	$234,080	94.3%	88.4%	–3.8%
33	$229,623	10	6	$112,866	49.2%	89.0%	$116,757	50.8%	78.9%	10.0%
34	$228,066	33	15	$158,437	69.5%	89.0%	$69,629	30.5%	87.7%	1.3%
35	$210,642	27	12	$88,357	41.9%	91.3%	$122,285	58.1%	89.7%	1.6%
36	$209,940	15	12	$117,410	55.9%	90.1%	$92,530	44.1%	89.6%	0.5%
37	$206,043	19	14	$118,579	57.6%	88.0%	$87,464	42.4%	84.2%	3.7%
38	$198,482	6	1	$18,276	9.2%	85.7%	$180,205	90.8%	85.1%	0.6%
39	$196,693	14	11	$117,090	59.5%	95.7%	$79,603	40.5%	83.0%	12.7%
40	$190,655	15	12	$124,788	65.5%	87.0%	$65,867	34.5%	86.3%	0.7%
41	$182,976	15	10	$92,437	50.5%	92.0%	$90,539	49.5%	81.0%	11.0%
42	$178,367	30	16	$42,074	23.6%	81.5%	$136,293	76.4%	82.3%	–0.8%
43	$176,977	21	9	$93,162	52.6%	81.4%	$83,815	47.4%	82.6%	–1.2%
44	$176,748	15	11	$89,123	50.4%	94.0%	$87,625	49.6%	88.1%	5.9%
45	$168,414	24	10	$58,140	34.5%	88.9%	$110,274	65.5%	80.6%	8.3%
46	$162,867	17	10	$106,249	65.2%	87.7%	$56,619	34.8%	89.5%	–1.8%
47	$162,040	17	8	$69,741	43.0%	83.1%	$92,299	57.0%	73.9%	9.2%

(continued)

Table 3-23. Share of Nonpatient and Patient Tests at Hospital Labs (continued)

				Nonpatient Tests			Patient Tests			
Facility Name	Total Allowed Charges	Number of Counties Served	Counties Served over $100 (Excl. G0001)	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Nonpatient Share Minus Patient Share of Demo Tests
48	$160,824	12	6	$68,730	42.7%	87.9%	$92,094	57.3%	83.8%	4.0%
49	$159,378	22	10	$78,948	49.5%	84.7%	$80,431	50.5%	86.6%	–1.9%
50	$158,990	28	10	$13,540	8.5%	73.7%	$145,450	91.5%	83.7%	–10.1%
51	$156,040	15	8	$70,352	45.1%	88.1%	$85,688	54.9%	83.9%	4.2%
52	$155,463	15	9	$44,792	28.8%	90.5%	$110,671	71.2%	83.8%	6.7%
53	$153,695	8	3	$40,007	26.0%	83.1%	$113,688	74.0%	82.3%	0.8%
54	$153,519	18	8	$81,938	53.4%	86.7%	$71,581	46.6%	88.0%	–1.4%
55	$144,304	14	7	$2,201	1.5%	46.7%	$142,103	98.5%	65.9%	–19.2%
56	$143,648	17	8	$86,248	60.0%	90.1%	$57,400	40.0%	85.8%	4.3%
57	$140,943	9	6	$69,349	49.2%	84.9%	$71,594	50.8%	75.0%	9.9%
58	$138,895	7	4	$47,819	34.4%	91.1%	$91,076	65.6%	88.7%	2.4%
59	$137,565	10	5	$60,768	44.2%	89.1%	$76,797	55.8%	81.2%	7.9%
60	$135,936	11	8	$90,596	66.6%	89.2%	$45,340	33.4%	92.5%	–3.3%
61	$135,870	11	6	$82,425	60.7%	88.5%	$53,445	39.3%	88.6%	–0.1%
62	$134,079	15	12	$103,105	76.9%	85.1%	$30,974	23.1%	81.5%	3.6%

(continued)

Table 3-23. Share of Nonpatient and Patient Tests at Hospital Labs (continued)

				Nonpatient Tests			Patient Tests			
Facility Name	Total Allowed Charges	Number of Counties Served	Counties Served over $100 (Excl. G0001)	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Allowed Charges	Share of Allowed Charges	Share of Demo Tests	Nonpatient Share Minus Patient Share of Demo Tests
63	$131,741	13	8	$56,807	43.1%	88.5%	$74,934	56.9%	76.8%	11.7%
64	$127,665	17	12	$48,078	37.7%	80.6%	$79,587	62.3%	81.1%	–0.5%
65	$126,519	15	10	$83,678	66.1%	91.1%	$42,842	33.9%	93.4%	–2.2%
66	$122,619	18	10	$20,016	16.3%	66.4%	$102,603	83.7%	74.9%	–8.5%
67	$121,485	16	8	$49,341	40.6%	84.9%	$72,144	59.4%	83.6%	1.3%
68	$121,228	13	6	$48,953	40.4%	94.8%	$72,275	59.6%	82.5%	12.2%
69	$116,896	10	5	$52,756	45.1%	95.2%	$64,140	54.9%	82.9%	12.4%
70	$115,118	18	16	$12,010	10.4%	86.1%	$103,108	89.6%	81.7%	4.3%
71	$112,956	13	7	$59,748	52.9%	88.6%	$53,209	47.1%	83.4%	5.2%
72	$112,588	13	7	$43,936	39.0%	90.0%	$68,652	61.0%	83.6%	6.4%
73	$111,669	24	11	$24,523	22.0%	89.5%	$87,146	78.0%	86.8%	2.7%
74	$108,659	11	5	$30,894	28.4%	59.5%	$77,766	71.6%	85.5%	–26.0%
75	$106,535	21	13	$70,605	66.3%	85.4%	$35,930	33.7%	82.0%	3.4%
76	$104,874	14	6	$55,111	52.6%	91.1%	$49,763	47.5%	94.9%	–3.8%
77	$104,010	15	7	$22,631	21.8%	80.1%	$81,379	78.2%	84.7%	–4.6%
78	$100,134	10	7	$28,655	28.6%	82.1%	$71,479	71.4%	85.5%	–3.4%

Source: 1994 Outpatient SAF.

We are interested in examining several questions about the nonpatient and patient shares, including the following:

- Do hospitals have similar nonpatient shares?
- Are hospital outpatient charges dominated by nonpatient tests?

From Table 3-23, we can observe that the share of allowed charges for nonpatient and the share of allowed charges for patient tests were highly dependent on the hospital. For example, the nonpatient shares of the 37 hospitals with more than $200,000 in allowed charges ranged from 6 percent to 70 percent. Obviously, some hospitals pursued nonpatient testing more aggressively than others. It is also clear that nonpatient tests are not dominant at all hospitals.

From the "Share of Demo Test" columns under the nonpatient and outpatient categories, we can see that most hospitals performed a high percentage of demonstration tests for both nonpatient and patient tests. Among hospitals with over $200,000 in allowed charges, the lowest share of demonstration tests for nonpatient testing was 56 percent, while the lowest share for patient testing was 70 percent. Because the majority of tests performed at hospitals were demonstration tests, a decision to require them to bid could have a large impact on the revenue they receive from lab testing.

The last column in the table displays a difference in percentages, that is, the percentage of demonstration tests for nonpatients minus the percentage of demonstration tests for patients. Although this difference varied somewhat by hospital, for most hospitals nonpatient tests were slightly more likely than patient tests to be demonstration procedures.

3.1.7 Test Coverage by Lab Size and Type

One of the key issues in the design of the demonstration is which labs should be required to submit bids. A possible criterion for determining bidding requirements is lab size, as measured by total allowed charges. In this section, we analyze the effects of requiring bidding by labs with over $200,000 or over $100,000 in allowed charges, using 1994 data from Tennessee. We examine the effects on aggregate test coverage, individual test coverage, number of demonstration tests covered by required bidders, and regional coverage.

Aggregate Test Coverage by Lab Type at Various Cutoffs

Tables 3-24 and 3-25 display the charges, shares, and number of labs that would be required to bid under a number of bidding requirement scenarios.

Table 3-24 summarizes the information in Table 3-13 using a $200,000 cutoff point to determine which labs have to bid. The first scenario shows labs that meet the $200,000 cutoff based on all charges. The second scenario includes labs that meet the $200,000 cutoff based on demonstration charges only. The third scenario includes labs that meet the $200,000 cutoff based on all nonpatient charges. The fourth scenario includes labs that meet the $200,000 cutoff based on all nonpatient demonstration charges.

The shares in Table 3-24 represent the share of total charges of all labs in each type that meet the cutoff. For example, in Scenario 1, 89.9 percent of all charges of independent labs were performed at independent labs that meet the $200,000 cutoff. Of all demonstration tests performed by independent labs, 91.1 percent were performed at labs that meet the $200,000 cutoff. For reference, the total allowed charges from all labs, both above and below the $200,000 cutoff, is shown at the bottom of the table.

With a $200,000 cutoff for all charges, required bidders accounted for about 57 percent of total and demonstration allowed charges. In each of the remaining scenarios, the criteria for inclusion are more strict, so that coverage necessarily falls. For example, in Scenario 2, only demonstration charges are counted toward the $200,000 cutoff. This leads to a slightly lower level of coverage of about 54 percent of total and demonstration charges. In Scenarios 3 and 4, only nonpatient charges are counted toward the cutoff and coverage falls to 50.2 and 47.8 of total allowed charges and 50.3 and 47.9 percent of allowed charges for demonstration tests, respectively.

Table 3-24. Summary of the Aggregate Test Coverage by Lab Type: $200,000 Cutoff
Making the cutoff rule more restrictive has little effect on the number of independent labs or POLs that would be required to bid, but significantly lowers the number of hospital labs that would be required to bid.

Type of Lab	Total Allowed Charges	Share of Total Allowed Charges	Total Demonstration Charges	Share of Total Demonstration Charges	Number of Labs
$200,000 Cutoff, All Charges					
Independent	$20,092,746	89.9%	$17,216,728	91.1%	9
POL	$1,742,723	9.1%	$1,673,912	9.9%	6
Hospital	$16,316,673	65.2%	$12,274,585	64.8%	37
Hospital Nonpatient	$7,272,552	66.3%	$5,801,853	65.6%	n/a
Total	$38,152,142	57.2%	$31,165,225	56.9%	52
$200,000 Cutoff, Demonstration Charges					
Independent	$20,092,746	89.9%	$17,216,728	91.1%	9
POL	$1,542,205	8.0%	$1,478,166	8.7%	5
Hospital	$14,440,010	57.7%	$10,819,417	57.1%	28
Hospital Nonpatient	$6,475,038	59.0%	$5,145,841	58.2%	n/a
Total	$36,074,961	54.1%	$29,514,311	53.8%	42
$200,000 Cutoff, Nonpatient Charges					
Independent	$20,092,746	89.9%	$17,216,728	91.1%	9
POL	$1,742,723	9.1%	$1,673,912	9.9%	6
Hospital Nonpatient	$4,589,115	41.8%	$3,612,003	40.8%	14
Total	$26,424,584	50.2%	$22,502,643	50.3%	29
$200,000 Cutoff, Nonpatient Demonstration Charges					
Independent	$20,092,746	89.9%	$17,216,728	91.1%	9
POL	$1,542,205	8.0%	$1,478,166	8.7%	5
Hospital Nonpatient	$3,488,313	31.8%	$2,720,377	30.8%	9
Total	$25,123,264	47.8%	$21,415,271	47.9%	23
Totals					
Independent	$22,362,299		$18,904,789		
POL	$19,250,291		$16,976,499		
Hospital	$25,036,591		$18,936,139		
Hospital Nonpatient	$10,973,746		$8,842,853		
Total	$66,649,181		$54,817,427		

Source: 1994 Lab and Outpatient SAFs.

Table 3-25. Summary of the Aggregate Test Coverage by Lab Type: $100,000 Cutoff
Reducing the cutoff to $100,000 would double the number of required bidders, but only increase the share of total charges by up to 15 percentage points.

Type of Lab	Total Allowed Charges	Share of Total Allowed Charges	Total Demonstration Charges	Share of Total Demonstration Charges	Number of Labs
$100,000 Cutoff, All Charges					
Independent	$20,991,237	93.9%	$17,853,142	94.4%	15
POL	$4,342,679	22.6%	$4,051,383	23.9%	25
Hospital	$22,164,736	88.5%	$16,790,161	88.7%	78
Hospital Nonpatient	$9,732,189	88.7%	$7,826,050	88.5%	n/a
Total	$47,498,651	71.3%	$38,694,686	70.6%	118
$100,000 Cutoff, Demonstration Charges					
Independent	$20,736,400	92.7%	$17,765,902	94.0%	13
POL	$4,007,419	20.8%	$3,876,288	22.8%	22
Hospital	$20,275,006	81.0%	$15,413,541	81.4%	61
Hospital Nonpatient	$9,149,194	83.4%	$7,363,677	83.3%	n/a
Total	$45,018,824	67.5%	$37,055,731	67.6%	96
$100,000 Cutoff, Nonpatient Charges					
Independent	$20,991,237	93.9%	$17,765,902	94.0%	15
POL	$4,342,679	22.6%	$3,876,288	22.8%	25
Hospital Nonpatient	$7,167,546	65.3%	$5,765,751	65.2%	32
Total	$32,501,462	61.8%	$27,407,941	61.3%	72
$100,000 Cutoff, Nonpatient Demonstration Charges					
Independent	$20,736,400	92.7%	$17,765,902	94.0%	13
POL	$4,007,419	20.8%	$3,876,288	22.8%	22
Hospital Nonpatient	$6,489,340	59.1%	$5,200,713	58.8%	23
Total	$31,233,158	59.4%	$26,842,903	60.0%	58
Totals					
Independent	$22,362,299		$18,904,789		
POL	$19,250,291		$16,976,499		
Hospital	$25,036,591		$18,936,139		
Hospital Nonpatient	$10,973,746		$8,842,853		
Total	$66,649,181		$54,817,427		

Source: 1994 Outpatient SAF.

Table 3-25 repeats the scenarios, but with a $100,000 cutoff instead of the $200,000 cutoff. Shifting the cutoff from $200,000 to $100,000 increases coverage of demonstration allowed charges by only about 12 percent. However, the number of labs under the $100,000 cutoff more than doubles under each scenario. Therefore, in terms of aggregate demonstration test coverage, relatively little is achieved by lowering the cutoff to $100,000 in any of the scenarios.

Test Coverage by Procedure at Various Cutoffs

Table 3-26 shows total allowed charges of each demonstration test and the coverage of these charges under each cutoff. The share of each demonstration test is calculated in column 4. The most common tests, 80019 (19 blood/urine tests), represented over 9 percent of all demonstration allowed charges. Automated hemograms (85021-85030) represented 16.8 percent of all demonstration tests.

The coverage of tests under the $200,000 and $100,000 cutoffs are shown in columns 5 and 6. For the most part, the coverage under the $200,000 cutoff was similar to that under the $100,000 cutoff, although necessarily lower. The coverage of tests under a $200,000 cutoff was within 20 percentage points of the coverage under the $100,000 cutoff in all but 11 tests. These tests represented only 4.3 percent of all demonstration tests in terms of allowed charges.

The tests where the coverage changed by more than 20 percent were 80003-80006, 82540, 82565, 83615, 85022, 85029, 85030, and 85730.

Overall, the coverage appeared to be nearly as extensive under the $200,000 cutoff as the $100,000 cutoff. The coverage did increase for the 11 tests mentioned above under the $100,000 cutoff, but the practical effects of this increase are likely to be small because these procedures accounted for a relatively minor share of overall demonstration allowed charges.

Table 3-27 displays the demonstration tests with a POL share equal to or greater than 50 percent. Also displayed in the table are total allowed charges in Tennessee, rank in Tennessee, POL share, coverage by labs that exceeded both the $100,000 and $200,000 thresholds, and potential substitutes for the POL-dominated tests commonly performed by independent or hospital labs.

Table 3-26. Individual Demonstration Test Coverage
For most tests, lowering the cutoff for bidding to $100,000 increases the share of test that would be provided by required bidders by less than 20 percentage points.

Procedure Code	Procedure Name	Total Allowed Charges	Share of Total Demo Tests Allowed Charges	Coverage at $200,000 Cutoff	Coverage at $100,000 Cutoff
80002	1-2 clinical chemistry tests	$214,737	0.3%	65.8%	72.8%
80003	3 clinical chemistry tests	$129,890	0.2%	40.6%	61.2%
80004	4 clinical chemistry tests	$297,650	0.4%	53.4%	77.0%
80005	5 clinical chemistry tests	$80,344	0.1%	37.4%	59.8%
80006	6 clinical chemistry tests	$647,206	1.0%	65.0%	86.1%
80007	7 clinical chemistry tests	$1,054,831	1.6%	66.0%	85.4%
80008	8 clinical chemistry tests	$160,903	0.2%	82.0%	92.8%
80009	9 clinical chemistry tests	$55,530	0.1%	64.9%	79.1%
80010	19 Clinical chemistry tests	$36,648	0.1%	59.8%	77.4%
80012	12 clinical chemistry tests	$136,150	0.2%	72.3%	80.4%
80016	13-16 blood/urine tests	$342,724	0.5%	41.2%	54.3%
80018	17-18 blood/urine tests	$834,512	1.3%	61.1%	80.7%
80019	19 blood/urine tests	$6,209,721	9.3%	64.6%	82.1%
80050	General health panel	$388,932	0.6%	74.7%	86.9%
80058	Hepatic function panel	$40,145	0.1%	43.5%	58.0%
80061	Lipid panel	$925,901	1.4%	72.0%	81.8%
80091	Thyroid panel	$590,118	0.9%	81.3%	91.6%
80092	Thyroid panel w/TSH	$1,205,324	1.8%	78.1%	86.1%
80162	Assay for digoxin	$2,174,549	3.3%	64.3%	83.6%
80185	Assay for phenytoin	$542,047	0.8%	71.8%	87.9%
80198	Assay for theophylline	$524,255	0.8%	55.9%	75.4%
81000	Urinalysis, nonauto, w/scope	$2,181,142	3.3%	22.0%	32.4%
81002	Urinalysis, nonauto, w/o scope	$382,519	0.6%	17.0%	19.8%
81003	Urinalysis, auto, w/o scope	$127,218	0.2%	78.7%	85.0%
81005	Urinalysis	$16,128	0.0%	8.4%	10.1%

(continued)

Table 3-26. Individual Test Coverage (continued)

Procedure Code	Procedure Name	Total Allowed Charges	Share of Total Demo Tests Allowed Charges	Coverage at $200,000 Cutoff	Coverage at $100,000 Cutoff
81015	Microscopic exam of urine	$59,019	0.1%	75.5%	82.9%
82150	Assay of amylase	$227,224	0.3%	63.5%	83.3%
82172	Apolipoprotein	$15,107	0.0%	13.5%	13.7%
82250	Assay bilirubin	$5,952	0.0%	48.8%	67.0%
82270	Test feces for blood	$292,496	0.4%	11.7%	21.0%
82310	Assay calcium	$32,116	0.0%	70.0%	85.4%
82330	Assay calcium	$150,912	0.2%	97.8%	98.6%
82378	Carcinoembryonic antigen	$394,981	0.6%	63.6%	80.7%
82465	Assay serum cholesterol	$227,990	0.3%	28.5%	37.5%
82540	Assay creatine	$8,548	0.0%	11.9%	43.0%
82550	Assay CK (CPK)	$143,405	0.2%	64.9%	84.0%
82565	Assay creatinine	$175,610	0.3%	42.0%	62.3%
82570	Assay urine creatinine	$10,630	0.0%	81.0%	90.3%
82607	Vitamin B-12	$586,519	0.9%	84.0%	92.6%
82728	Assay ferritin	$430,669	0.6%	82.5%	91.3%
82746	Blood folic acid serum	$344,002	0.5%	85.4%	94.2%
82784	Assay gammaglobulin IgM	$151,199	0.2%	81.3%	85.5%
82947	Assay quantitative, glucose	$1,335,782	2.0%	33.7%	47.3%
82948	Reagent strip/blood glucose	$268,294	0.4%	9.8%	14.8%
82962	Glucose blood test	$48,435	0.1%	28.6%	29.9%
82977	Assay of GGT	$114,740	0.2%	51.9%	57.8%
82985	Glycated protein	$125,042	0.2%	71.0%	71.1%
83036	Glycated hemoglobin test	$711,221	1.1%	60.9%	74.1%
83520	Immunoassay, RIA	$70,680	0.1%	42.6%	44.2%
83540	Assay iron	$503,525	0.8%	91.9%	94.0%
83550	Iron binding test	$505,360	0.8%	96.7%	98.6%

(continued)

Table 3-26. Individual Test Coverage (continued)

Procedure Code	Procedure Name	Total Allowed Charges	Share of Total Demo Tests Allowed Charges	Coverage at $200,000 Cutoff	Coverage at $100,000 Cutoff
83615	Lactate (LD) (LDH) enzyme	$32,485	0.0%	59.0%	80.1%
83690	Assay lipase	$46,355	0.1%	80.7%	93.5%
83718	Blood lipoprotein assay	$2,129,780	3.2%	70.3%	78.6%
83721	Blood lipoprotein assay	$158,157	0.2%	61.2%	66.0%
83735	Assay magnesium	$634,952	1.0%	81.1%	89.5%
83970	Assay of parathormone	$334,488	0.5%	90.5%	96.6%
84066	Assay prostate phosphatase	$56,753	0.1%	75.7%	85.7%
84075	Assay alkaline phosphatase	$19,854	0.0%	35.5%	43.2%
84100	Assay phosphorus	$14,150	0.0%	83.2%	93.5%
84132	Assay serum potassium	$595,703	0.9%	36.2%	49.4%
84153	Prostate specific antigen	$1,935,285	2.9%	74.5%	82.3%
84155	Assay protein	$28,505	0.0%	86.1%	90.7%
84165	Assay serum proteins	$180,953	0.3%	55.9%	60.1%
84295	Assay serum sodium	$54,851	0.1%	22.0%	34.2%
84436	Assay, total thyroxine	$569,947	0.9%	62.6%	77.0%
84439	Assay, free thyroxine	$172,674	0.3%	69.6%	77.8%
84443	Assay thyroid stim hormone	$1,786,041	2.7%	68.2%	81.4%
84450	Transferase (AST) (SGOT)	$62,181	0.1%	51.4%	64.6%
84460	Alanine amino (ALT) (SGPT)	$80,650	0.1%	59.4%	79.2%
84466	Transferrin	$137,675	0.2%	98.7%	99.2%
84478	Assay triglycerides	$190,355	0.3%	34.2%	43.0%
84479	Assay triiodothyronine (T-3)	$233,993	0.4%	66.8%	79.0%
84520	Assay urea nitrogen	$114,347	0.2%	36.7%	49.4%
84550	Assay blood uric acid	$33,436	0.1%	39.0%	49.5%
85007	Differential WBC count	$174,796	0.3%	69.6%	85.7%
85013	Hematocrit	$16,334	0.0%	2.5%	4.1%

(continued)

Table 3-26. Individual Test Coverage (continued)

Procedure Code	Procedure Name	Total Allowed Charges	Share of Total Demo Tests Allowed Charges	Coverage at $200,000 Cutoff	Coverage at $100,000 Cutoff
85014	Hematocrit	$170,342	0.3%	48.9%	60.8%
85018	Hemoglobin	$103,200	0.2%	43.5%	58.8%
85021	Automated hemogram	$361,028	0.5%	46.2%	54.3%
85022	Automated hemogram	$170,831	0.3%	18.0%	39.9%
85023	Automated hemogram	$1,547,767	2.3%	45.8%	75.2%
85024	Automated hemogram	$3,570,678	5.4%	17.4%	35.3%
85025	Automated hemogram	$3,965,425	5.9%	74.2%	87.1%
85027	Automated hemogram	$714,107	1.1%	61.0%	78.4%
85029	Automated hemogram	$756,538	1.1%	53.2%	79.9%
85030	Automated hemogram	$120,033	0.2%	43.8%	75.3%
85031	Manual hemogram, complete CBC	$110,418	0.2%	15.6%	15.8%
85044	Reticulocyte count	$67,002	0.1%	68.5%	86.6%
85048	White blood cell (WBC) count	$64,909	0.1%	55.6%	62.3%
85610	Prothrombin time	$2,103,157	3.2%	59.2%	75.1%
85651	RBC sed rate, nonauto	$489,605	0.7%	39.1%	54.1%
85730	Thromboplastin time, partial	$458,679	0.7%	68.4%	88.9%
86255	Fluorescent antibody; screen	$110,087	0.2%	86.0%	89.6%
86287	Hepatitis B (HBsAg)	$89,316	0.1%	92.5%	95.1%
86291	Hepatitis BS antibody test	$40,216	0.1%	88.1%	93.8%
86316	Immunoassay, tumor antigen	$705,159	1.1%	59.7%	71.4%
86430	Rheumatoid factor test	$79,450	0.1%	61.9%	75.8%
86592	Blood serology, qualitative	$99,195	0.1%	84.8%	88.2%
G0001	Drawing blood for specimen	$2,661,615	4.0%	75.2%	82.5%
P9604	One-way allow prorated trip	$134,316	0.2%	36.1%	40.8%
P9605	Routine venipuncture	$91,022	0.1%	10.5%	20.9%

Source: 1994 Lab and Outpatient SAFs.

Coverage by required bidders is calculated as the percent of the procedure that will be covered by labs that meet the cutoff points. For example, if we use a $200,000 cutoff threshold, 22 percent of procedure 81000 will be performed by labs that meet this threshold. Most of the percentages, with the exception of procedure G0001, are below 50 percent. Therefore, even if these tests are included in the bidding, they will still be dominated by POLs that are not required to bid.

As can be seen in the last column of Table 3-27, 13 out of the 22 procedures have substitutes. The procedure codes for the procedures with substitutes are 81000, 81002, 82465, 82947, 84075, 84132, 84295, 84550, 84478, 85013, 85022, 85024 and 85030. Several of the remaining tests were not very common in Tennessee, including 81005, 82117, 82962, 83520, and 85013. These tests all had allowed charges of less than $80,000 and were ranked no higher than 117 in Tennessee. Such tests could either be dropped from the demonstration test list or included in the demonstration with relatively little overall impact on POL revenues.

Number of Demonstration Tests by Lab

Table 3-28 displays total allowed charges, total demonstration allowed charges, and the number of demonstration tests billed for each of the 118 labs that attained the $100,000 cutoff. Currently, there are 102 proposed demonstration tests plus three multichannel chemistry test codes that were not available in 1994. Although the four largest labs performed more than 90 of the demonstration procedures, no single lab performed all of the demonstration tests. Of the 52 labs with more than $200,000 in allowed charges, 28 performed 75 or more demonstration procedures, and 23 performed between 60 and 74 demonstration procedures. Only one lab that had over $200,000 in total allowed charges performed less than 60 demonstration tests. Only 7 of the 66 labs between $100,000 and $200,000 in allowed charges performed 75 or more demonstration tests. In addition, 27 labs at this level performed less than 60 demonstration tests. One of these labs, which specializes in cytometry, did not perform any demonstration tests.

Labs may be capable of performing additional demonstration tests that they do not currently bill to Medicare. For example, labs that

Table 3-27. Demonstration Tests with 50 Percent or Greater POL Share
Many of the tests dominated by POLs had substitutes that were not dominated; other had very low charges.

Procedure Code	Procedure Name	Total Allowed Charges in TN	Rank in TN	POL Share	Coverage by Required Bidders		Substitutes
					$200,000 Cutoff	$100,000 Cutoff	
81000	Urinalysis, nonauto, w/scope	$2,181,142	5	70.7%	22.0%	32.4%	81003
81002	Urinalysis, nonauto, w/o scope	$382,519	41	79.4%	17.0%	19.8%	81003
81005	Urinalysis	$16,128	221	59.4%	8.4%	10.1%	
82172	Apolipoprotein	$15,107	225	84.3%	13.5%	13.7%	
82270	Test feces for blood	$292,496	49	87.5%	11.7%	21.0%	
82465	Assay serum cholesterol	$227,990	52	66.6%	28.5%	37.5%	80019
82947	Assay quantitative, glucose	$1,335,782	12	54.2%	33.7%	47.3%	80019
82948	Reagent strip/blood glucose	$268,294	50	84.0%	9.8%	14.8%	
82962	Glucose blood test	$48,435	136	68.8%	28.6%	29.9%	
83520	Immunoassay, RIA	$70,680	117	54.7%	42.6%	44.2%	
84075	Assay alkaline phosphatase	$19,854	209	55.9%	35.5%	43.2%	80019
84132	Assay serum potassium	$595,703	25	52.6%	36.2%	49.4%	80019
84295	Assay serum sodium	$54,851	131	65.9%	22.0%	34.2%	80019
84478	Assay triglycerides	$190,355	58	60.5%	34.2%	43.0%	80019
84550	Assay blood uric acid	$33,436	162	50.3%	39.0%	49.5%	80019
85013	Hematocrit	$16,334	219	88.0%	2.5%	4.1%	85014
85022	Automated hemogram	$170,831	65	59.2%	18.0%	39.9%	85025
85024	Automated hemogram	$3,570,678	3	73.8%	17.4%	35.3%	85025
85030	Automated hemogram	$120,033	86	52.7%	43.8%	75.3%	85029
85031	Manual hemogram, complete CBC	$110,418	89	68.7%	15.6%	15.8%	
85651	RBC sed rate, nonauto	$489,605	34	54.1%	39.1%	54.1%	
G0001	Drawing blood for specimen	$2,661,615	4	57.9%	75.2%	82.5%	

Source: 1994 Lab and Outpatient SAFs.

Table 3-28. Number of Demonstration Test Performed by Labs That Meet the Cutoff
Not surprisingly, large labs provided most demonstration tests.

Lab Name	Type*	Total Allowed Charges	Total Demonstration Allowed Charges	Number of Demonstration Tests Performed	Number of Demonstration Tests Capable of Performing
1	I	$6,996,255	$5,882,388	99	102
2	I	$5,936,251	$5,257,251	94	99
3	I	$2,800,564	$2,382,849	95	99
4	I	$1,748,761	$1,508,106	91	98
5	H	$1,233,493	$956,546	86	97
6	H	$981,211	$720,285	78	91
7	H	$980,517	$605,446	73	90
8	I	$867,849	$683,873	80	89
9	H	$853,607	$587,886	80	88
10	H	$791,677	$604,511	75	86
11	H	$676,242	$571,010	82	95
12	I	$651,165	$617,812	58	73
13	H	$643,804	$487,049	88	92
14	H	$542,997	$416,202	81	96
15	H	$538,008	$442,267	81	91
16	H	$494,302	$379,819	82	92
17	POL	$482,683	$448,437	81	88
18	H	$479,453	$359,433	84	95
19	H	$479,407	$312,403	77	91
20	H	$478,748	$368,269	77	94
21	H	$454,274	$265,186	69	91
22	H	$421,396	$309,857	81	92
23	H	$393,280	$276,090	64	84
24	I	$385,718	$317,617	73	81
25	H	$370,317	$281,468	79	89
26	H	$364,190	$276,410	79	87
27	H	$361,083	$307,737	68	85
28	I	$355,090	$327,348	64	75
29	I	$351,093	$239,484	77	92
30	H	$333,502	$240,122	72	89
31	H	$326,671	$224,953	83	93
32	H	$317,500	$267,787	74	86
33	H	$313,047	$254,396	79	88

(continued)

Table 3-28. Number of Demonstration Test Performed by Labs That Meet the Cutoff (continued)

Lab Name	Type*	Total Allowed Charges	Total Demonstration Allowed Charges	Number of Demonstration Tests Performed	Number of Demonstration Tests Capable of Performing
34	H	$284,348	$201,393	62	84
35	H	$279,326	$183,799	71	85
36	H	$275,310	$233,649	72	88
37	H	$274,530	$211,822	79	83
38	POL	$274,198	$253,879	63	78
39	POL	$271,803	$267,581	78	86
40	H	$270,846	$217,423	71	79
41	H	$264,910	$180,396	56	82
42	POL	$263,091	$259,891	38	58
43	H	$254,759	$221,187	78	89
44	H	$251,490	$218,812	67	73
45	POL	$250,430	$248,378	64	77
46	H	$248,112	$192,897	72	79
47	H	$229,623	$179,155	71	81
48	H	$228,066	$190,307	74	85
49	H	$210,642	$182,001	73	81
50	H	$209,940	$176,503	66	85
51	H	$206,043	$170,111	77	89
52	POL	$200,518	$195,746	61	70
53	H	$198,482	$150,314	83	93
54	H	$196,693	$171,467	70	83
55	H	$190,655	$153,682	81	89
56	I	$189,658	$137,326	79	89
57	POL	$186,877	$185,523	61	76
58	H	$182,976	$147,255	58	73
59	POL	$180,624	$179,675	51	64
60	H	$178,367	$137,796	73	85
61	H	$176,977	$127,610	54	76
62	H	$176,748	$148,414	78	87
63	I	$173,174	$170,710	58	74
64	H	$168,414	$128,046	69	84
65	H	$162,867	$135,734	71	80
66	H	$162,040	$109,689	67	72

(continued)

Table 3-28. Number of Demonstration Test Performed by Labs That Meet the Cutoff (continued)

Lab Name	Type*	Total Allowed Charges	Total Demonstration Allowed Charges	Number of Demonstration Tests Performed	Number of Demonstration Tests Capable of Performing
67	H	$160,824	$124,030	67	86
68	H	$159,378	$129,141	71	83
69	H	$158,990	$93,324	67	84
70	H	$156,040	$122,124	77	91
71	H	$155,463	$118,247	66	78
72	H	$153,695	$118,173	58	85
73	H	$153,519	$124,383	69	88
74	POL	$153,512	$152,959	42	62
75	I	$152,537	$0	0	0
76	POL	$152,198	$151,117	54	70
77	POL	$148,147	$139,415	26	50
78	POL	$148,043	$140,646	35	56
79	I	$145,241	$115,913	75	90
80	H	$144,304	$67,519	67	84
81	POL	$143,991	$133,478	22	60
82	H	$143,648	$121,234	49	67
83	H	$140,943	$100,994	61	78
84	H	$138,895	$117,799	75	88
85	POL	$138,487	$138,349	51	76
86	H	$137,565	$105,765	61	73
87	H	$135,936	$116,971	70	84
88	H	$135,870	$112,514	66	85
89	I	$135,581	$125,225	53	75
90	H	$134,079	$106,512	63	72
91	POL	$131,967	$124,516	34	58
92	H	$131,741	$100,278	66	82
93	POL	$130,205	$125,487	58	72
94	POL	$129,273	$128,062	59	69
95	POL	$128,949	$127,738	37	60
96	H	$127,665	$93,187	62	73
97	H	$126,519	$110,785	67	83
98	POL	$125,242	$124,926	48	71
99	POL	$124,533	$123,984	50	73

(continued)

Table 3-28. Number of Demonstration Test Performed by Labs That Meet the Cutoff (continued)

Lab Name	Type*	Total Allowed Charges	Total Demonstration Allowed Charges	Number of Demonstration Tests Performed	Number of Demonstration Tests Capable of Performing
100	POL	$123,357	$113,834	28	63
101	H	$122,619	$78,325	68	78
102	H	$121,485	$90,797	68	86
103	H	$121,228	$99,511	66	83
104	POL	$120,547	$3,354	11	47
105	POL	$119,290	$112,666	40	67
106	H	$116,896	$95,943	61	78
107	H	$115,118	$84,654	56	71
108	H	$112,956	$88,395	73	86
109	H	$112,588	$85,462	71	75
110	H	$111,669	$88,566	72	79
111	POL	$109,291	$98,591	39	70
112	H	$108,659	$80,608	53	78
113	H	$106,535	$81,096	64	79
114	POL	$105,422	$73,150	17	50
115	H	$104,874	$92,660	66	80
116	H	$104,010	$80,068	73	86
117	I	$102,300	$87,240	50	69
118	H	$100,134	$76,508	65	76

*H = hospital lab, I = independent lab, POL = physician office lab.

Source: 1994 Lab and Outpatient SAFs.

currently perform 19 automated chemistry tests (80018) are also capable of performing 17-18 automated tests (80019) even though they may not currently bill Medicare for the latter procedure. To analyze lab capabilities to perform tests they don't currently bill for, we developed an algorithm for grouping related tests. We assumed that labs performing x automated chemistry tests are capable of performing automated chemistry panels with less than x tests, that labs performing organ and disease panels are capable of performing all components of those panels, that labs performing hemograms are capable of performing other hemograms, and so on. After applying this algorithm, we estimated the number of demonstration tests each lab was capable of performing (column 6). Based on our algorithm, 49 of the 52 labs with more than $200,000 in allowed charges were capable of performing at least 75 demonstration tests. Thirty-eight of the 66 labs between $100,000 and $200,000 are capable of performing at least 75 demonstration tests.

Number of Procedures Not Performed at Each Lab by Specialty

Table 3-29 shows the number of procedures not performed by each lab classified in eight specialties. The number of possible demonstration procedures in each specialty is shown in parentheses at the bottom of each column heading. At least half of the automated chemistry panels were performed by all of the labs that attained the $200,000 cutoff. Four of the hospitals that attained the $200,000 cutoff did not perform any organ and disease-oriented panels. All of the labs above the $200,000 cutoff performed at least one therapeutic drug assay and one urinalysis procedure.

The most frequently performed type of procedure was chemistry. All of the labs that attained the $200,000 cutoff performed at least half of the chemistry procedures. Hematology procedures were also commonly performed by labs meeting the $200,000 cutoff. All of these labs performed at least half of the hematology procedures with the exception of 5 labs.

Coverage was more spotty at labs in the $100,000 to $200,000 range. These labs performed fewer overall procedures, although most of these labs performed procedures in each specialty area.

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty

With very few exceptions, large labs performed at least one procedure in each specialty area. Coverage was more spotty at labs in the $100,000 to $200,000 range.

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
1	$6,996,255	0	0	0	0	1	1	0	1
2	$5,936,251	0	2	0	1	1	3	0	1
3	$2,800,564	0	0	0	1	3	3	0	0
4	$1,748,761	0	2	0	1	4	3	0	1
5	$1,233,493	1	0	0	2	6	5	1	1
6	$981,211	2	2	0	1	10	7	0	2
7	$980,517	9	0	0	2	6	9	0	3
8	$867,849	0	1	0	4	7	7	1	2
9	$853,607	0	5	0	2	7	5	1	2
10	$791,677	1	3	1	2	11	7	0	2
11	$676,242	4	3	0	3	5	5	0	0
12	$651,165	0	4	0	3	22	10	2	3
13	$643,804	1	1	0	1	6	3	0	2
14	$542,997	2	0	0	3	6	8	1	1
15	$538,008	3	1	0	2	6	7	0	2
16	$494,302	3	2	0	1	7	5	0	2
17	$482,683	0	0	0	4	7	5	3	2
18	$479,453	2	2	0	3	5	4	0	2
19	$479,407	6	1	0	2	6	7	1	2
20	$478,748	4	3	0	1	6	8	0	3

(continued)

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty (continued)

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
21	$454,274	3	5	0	3	13	6	1	2
22	$421,396	1	3	0	2	6	6	1	2
23	$393,280	7	2	0	4	11	9	2	3
24	$385,718	2	1	0	4	12	9	0	1
25	$370,317	2	1	0	2	9	5	2	2
26	$364,190	1	2	0	3	10	5	0	2
27	$361,083	4	4	0	2	12	9	2	1
28	$355,090	0	3	0	4	20	5	6	0
29	$351,093	3	2	0	3	7	7	0	3
30	$333,502	6	2	0	1	8	8	3	2
31	$326,671	0	2	0	1	8	5	1	2
32	$317,500	2	0	0	3	9	11	1	2
33	$313,047	0	1	0	4	10	5	1	2
34	$284,348	6	2	0	4	16	8	2	2
35	$279,326	4	2	0	1	12	7	2	3
36	$275,310	4	3	0	3	11	7	0	2
37	$274,530	0	5	0	2	8	5	2	1
38	$274,198	3	3	0	3	17	8	3	2
39	$271,803	0	0	0	3	14	5	0	2
40	$270,846	4	3	0	3	9	9	1	2

(continued)

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty (continued)

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
41	$264,910	6	4	0	4	21	9	0	2
42	$263,091	6	5	0	3	29	13	5	3
43	$254,759	0	1	0	3	9	7	1	3
44	$251,490	0	2	0	3	15	9	4	2
45	$250,430	2	4	0	4	14	9	3	2
46	$248,112	1	2	0	4	11	8	2	2
47	$229,623	5	2	0	2	10	10	0	2
48	$228,066	6	1	0	3	9	7	0	2
49	$210,642	1	4	0	3	11	7	1	2
50	$209,940	6	2	0	3	16	7	0	2
51	$206,043	3	1	0	4	9	4	1	3
52	$200,518	3	0	0	3	19	10	4	2
53	$198,482	0	3	0	0	7	6	1	2
54	$196,693	0	2	0	3	15	8	2	2
55	$190,655	1	1	0	3	9	4	2	1
56	$189,658	0	2	0	4	8	4	2	3
57	$186,877	2	2	0	3	23	7	2	2
58	$182,976	7	2	0	4	15	9	5	2
59	$180,624	1	4	0	3	27	10	4	2
60	$178,367	2	2	0	2	10	11	0	2

(continued)

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty (continued)

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
61	$176,977	11	2	2	4	17	9	1	2
62	$176,748	1	2	0	3	8	6	2	2
63	$173,174	3	3	2	3	19	8	4	2
64	$168,414	3	1	0	3	11	10	2	3
65	$162,867	5	1	0	3	12	8	1	1
66	$162,040	1	2	0	4	12	10	3	3
67	$160,824	8	2	0	4	10	7	2	2
68	$159,378	1	4	0	3	11	7	2	3
69	$158,990	5	3	2	3	12	7	1	2
70	$156,040	5	0	0	2	8	7	1	2
71	$155,463	0	3	0	4	18	7	2	2
72	$153,695	10	3	0	3	16	9	1	2
73	$153,519	6	2	0	2	10	8	4	1
74	$153,512	6	2	3	3	28	11	5	2
75	$152,537	13	5	3	5	49	18	6	3
76	$152,198	1	2	0	4	24	11	4	2
77	$148,147	8	4	3	4	40	10	5	2
78	$148,043	10	2	3	4	29	11	6	2
79	$145,241	2	4	0	4	10	6	0	1
80	$144,304	2	4	0	4	12	8	3	2

(continued)

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty (continued)

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
81	$143,991	12	4	3	2	41	13	3	2
82	$143,648	1	2	0	4	28	13	3	2
83	$140,943	3	4	0	4	14	8	6	2
84	$138,895	0	1	0	2	14	7	1	2
85	$138,487	5	4	1	2	21	11	5	2
86	$137,565	5	2	0	4	16	9	3	2
87	$135,936	1	2	0	3	16	8	2	0
88	$135,870	5	2	0	4	10	10	3	2
89	$135,581	3	2	0	4	24	9	5	2
90	$134,079	2	4	0	3	16	9	3	2
91	$131,967	9	5	3	4	32	12	1	2
92	$131,741	5	2	0	4	17	4	2	2
93	$130,205	1	5	0	3	20	10	3	2
94	$129,273	2	3	2	3	20	9	2	2
95	$128,949	10	5	0	4	26	12	6	2
96	$127,665	6	2	0	3	16	10	1	2
97	$126,519	3	2	0	4	14	8	2	2
98	$125,242	10	2	1	4	20	12	3	2
99	$124,533	8	3	2	3	21	9	4	2
100	$123,357	11	5	1	4	37	9	5	2

(continued)

Table 3-29. Number of Demonstration Procedures NOT Performed, by Area of Specialty (continued)

Facility Name	Total Allowed Charges	Automated Chemistry Panels (80002-80019, G0058-G0060) (16)	Organ or Disease Oriented Panels (80050-80099) (5)	Therapeutic Drug Assays (80100-80199) (3)	Urinalysis (81000-81099) (5)	Chemistry (82000-84999) (49)	Hematology (85000-85999) (18)	Immunology (86000-87999) (6)	Procedures/ Trips (G0001, P9604, P9605) (3)
101	$122,619	5	2	0	1	11	10	3	2
102	$121,485	7	4	0	1	12	6	2	2
103	$121,228	0	2	0	3	15	11	3	2
104	$120,547	12	5	3	4	42	16	6	3
105	$119,290	7	4	0	4	28	11	6	2
106	$116,896	5	5	0	4	15	9	1	2
107	$115,118	6	2	0	4	17	11	3	3
108	$112,956	1	3	0	3	15	5	0	2
109	$112,588	1	3	0	3	13	8	1	2
110	$111,669	1	2	0	3	10	9	2	3
111	$109,291	5	4	3	4	32	9	4	2
112	$108,659	0	4	0	3	30	9	0	3
113	$106,535	3	2	0	3	18	7	3	2
114	$105,422	12	5	3	4	40	13	6	2
115	$104,874	3	2	0	4	13	8	4	2
116	$104,010	0	2	0	3	13	7	2	2
117	$102,300	6	4	1	3	25	6	5	2
118	$100,134	3	3	0	4	12	9	3	3

Regional Coverage at the $200,000 and $100,000 Cutoffs

Tables 3-30 and 3-31 display information about the regional coverage of demonstration tests under the $200,000 and $100,000 cutoffs, respectively. Column 2 in each table lists the total allowed charges for demonstration tests drawn in each county. Columns 3 and 4 in Table 3-30 contain the sum of allowed charges for demonstration tests performed by labs that reached the $200,000 cutoff and the share. Columns 3 and 4 in Table 3-31 contain analogous information at the $100,000 cutoff.

Table 3-30 displays the number of labs and share by type of lab under the $200,000 cutoff. The sum of these shares equal the share in column 4. The shares represent the percentage of tests drawn in the county that were performed by labs that attained the cutoff by each lab type. For example, 53.6 percent of all demonstration tests drawn in Anderson County were performed by independent labs that attained the $200,000 cutoff.

Geographic coverage under each cutoff was reasonably good as measured by the number of labs attaining the cutoff. All of the counties were served by at least one laboratory that attained the $200,000 cutoff. On average, each county was served by 3.4 independent labs, 0.5 POLs, and 6.8 hospital labs that met the $200,000 cutoff. Under the $200,000 cutoff, 86 out of 95 counties were served by 10 or more labs. Of the remaining counties, 2 were served by 2 labs, 2 counties were served by 3 labs, 3 counties were served by 4 labs, and 2 counties were served by 5 labs. Looking solely at independent lab coverage under the $200,000 cutoff, 3 counties were served by no independent labs, and 9 counties were served by 1 independent lab. Only 2 of these counties had demonstration allowed charges greater than $100,000. Given the low number of POLs that met the cutoff, it is not surprising that most counties were served by no or 1 POLs. The lowest number of hospital labs serving a county and meeting the $200,000 cutoff was 2.

Although the number of labs serving each county that met the $200,000 cutoff was reasonably high, there was a fairly high variation in the county market share for these labs. There were 19 counties where labs meeting the $200,000 cutoff had market shares

Table 3-30. Lab Coverage by County—Required Bidders: $200,000 Cutoff
The number of required bidders serving each county was fairly high, while the share of county allowed charges accounted for by these labs varied widely.

		Labs Meeting $200,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Anderson	$1,013,346	$834,487	82.4%	3	53.6%	1	3.1%	11	25.6%
Bedford	$201,186	$56,381	28.0%	3	22.4%	0	0.6%	8	5.0%
Benton	$87,254	$21,214	24.3%	3	15.5%	0	0.3%	7	8.6%
Bledsoe	$48,117	$3,102	6.4%	1	1.7%	0	1.0%	5	3.8%
Blount	$819,974	$719,092	87.7%	4	15.2%	1	3.6%	11	68.9%
Bradley	$654,323	$359,453	54.9%	5	20.3%	1	7.8%	12	26.8%
Campbell	$499,713	$284,114	56.9%	2	9.4%	2	2.5%	8	45.0%
Cannon	$126,566	$72,833	57.5%	5	51.8%	1	3.1%	4	2.7%
Carroll	$361,920	$61,870	17.1%	4	8.1%	2	8.0%	6	1.0%
Carter	$331,192	$312,055	94.2%	3	4.6%	0	1.3%	6	88.3%
Cheatham	$115,492	$37,093	32.1%	4	9.8%	0	0.3%	9	22.0%
Chester	$19,546	$7,009	35.9%	1	2.2%	1	22.5%	3	11.2%
Claiborne	$269,754	$77,965	28.9%	3	18.8%	0	2.5%	7	7.6%
Clay	$63,511	$14,394	22.7%	3	15.2%	0	0.8%	4	6.7%
Cocke	$293,682	$83,551	28.4%	4	19.2%	0	5.8%	6	3.5%
Coffee	$360,775	$187,909	52.1%	3	48.2%	1	0.7%	9	3.2%
Crockett	$84,866	$27,404	32.3%	1	4.1%	1	24.0%	1	4.2%
Cumberland	$365,464	$86,194	23.6%	4	13.2%	0	7.0%	11	3.3%
Davidson	$7,287,464	$4,721,399	64.8%	8	36.3%	3	5.9%	17	22.6%
DeKalb	$146,216	$61,627	42.1%	3	26.5%	0	8.6%	7	7.1%

(continued)

Table 3-30. Lab Coverage by County—Required Bidders: $200,000 Cutoff (continued)

		Labs Meeting $200,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Decatur	$213,631	$208,021	97.4%	4	11.7%	1	0.4%	6	85.3%
Dickson	$309,031	$263,361	85.2%	6	25.2%	1	4.2%	8	55.9%
Dyer	$438,378	$240,674	54.9%	3	2.4%	1	51.4%	3	1.1%
Fayette	$92,258	$20,004	21.7%	2	3.0%	1	6.9%	4	11.9%
Fentress	$170,125	$9,448	5.6%	3	1.7%	1	1.0%	7	2.8%
Franklin	$429,683	$230,266	53.6%	2	49.3%	0	2.9%	6	1.4%
Gibson	$219,733	$41,450	18.9%	3	8.9%	0	3.1%	3	6.8%
Giles	$262,431	$110,303	42.0%	3	31.7%	1	4.0%	7	6.3%
Grainger	$63,729	$42,810	67.2%	2	47.3%	0	0.9%	7	18.9%
Greene	$571,039	$296,932	52.0%	3	38.4%	1	11.4%	8	2.2%
Grundy	$46,710	$25,159	53.9%	2	35.6%	0	5.7%	6	12.6%
Hamblen	$704,594	$110,935	15.7%	5	8.4%	0	3.7%	10	3.6%
Hamilton	$4,281,444	$2,706,182	63.2%	6	34.6%	0	4.7%	12	23.9%
Hancock	$57,788	$30,731	53.2%	2	39.4%	0	8.9%	6	4.9%
Hardeman	$501,271	$165,118	32.9%	4	26.9%	3	5.3%	4	0.8%
Hardin	$231,742	$171,024	73.8%	2	0.8%	0	2.1%	8	70.9%
Hawkins	$282,317	$123,363	43.7%	4	29.2%	0	3.6%	7	10.9%
Haywood	$145,604	$52,672	36.2%	4	26.6%	0	2.5%	3	7.1%
Henderson	$133,348	$61,245	45.9%	1	3.9%	2	11.5%	7	30.5%
Henry	$267,585	$34,359	12.8%	2	7.2%	0	4.3%	6	1.3%

(continued)

Table 3-30. Lab Coverage by County—Required Bidders: $200,000 Cutoff (continued)

		Labs Meeting $200,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Hickman	$246,293	$90,730	36.8%	4	9.3%	0	2.3%	6	25.3%
Houston	$83,466	$24,593	29.5%	4	21.9%	0	2.6%	6	4.9%
Humphreys	$212,625	$90,523	42.6%	5	30.0%	0	2.4%	5	10.2%
Jackson	$80,754	$17,098	21.2%	1	0.3%	0	0.1%	4	20.8%
Jefferson	$292,360	$111,757	38.2%	4	23.0%	0	5.1%	6	10.1%
Johnson	$152,587	$64,533	42.3%	2	28.7%	0	5.0%	4	8.6%
Knox	$4,772,561	$3,019,687	63.3%	7	23.9%	2	9.6%	12	29.8%
Lake	$7,032	$2,513	35.7%	1	27.3%	0	0.1%	3	8.4%
Lauderdale	$217,572	$94,227	43.3%	4	31.2%	2	9.5%	4	2.5%
Lawrence	$409,053	$262,065	64.1%	2	56.9%	0	0.9%	7	6.3%
Lewis	$26,479	$18,020	68.1%	2	15.2%	0	0.4%	8	52.5%
Lincoln	$336,757	$115,337	34.2%	5	25.8%	1	4.9%	6	3.5%
Loudon	$280,459	$108,674	38.7%	3	27.2%	1	1.4%	6	10.1%
Macon	$297,531	$202,154	67.9%	5	23.5%	0	3.5%	12	60.5%
Madison	$1,259,438	$871,707	69.2%	1	0.5%	0	0.4%	7	11.7%
Marion	$164,535	$48,027	29.2%	4	65.5%	0	0.6%	7	1.9%
Marshall	$316,004	$288,520	91.3%	8	16.3%	2	36.2%	6	16.7%
Maury	$889,442	$735,543	82.7%	2	19.0%	0	2.2%	5	7.9%
McMinn	$480,534	$420,415	87.5%	3	31.3%	1	1.2%	7	58.8%
McNairy	$111,775	$14,010	12.5%	5	35.3%	1	2.0%	8	45.4%

(continued)

Table 3-30. Lab Coverage by County—Required Bidders: $200,000 Cutoff (continued)

		Labs Meeting $200,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Meigs	$21,376	$15,445	72.3%	0	0.0%	0	0.0%	10	72.3%
Monroe	$242,151	$90,260	37.3%	3	16.3%	0	4.2%	8	16.8%
Montgomery	$506,013	$430,868	85.2%	5	33.4%	0	1.0%	9	50.8%
Moore	$2,106	$412	19.6%	0	0.0%	0	0.0%	3	19.6%
Morgan	$138,911	$108,942	78.4%	3	60.8%	0	4.0%	7	13.6%
Obion	$149,228	$32,769	22.0%	3	16.2%	0	4.7%	4	1.1%
Overton	$122,378	$17,079	14.0%	2	0.5%	1	5.4%	4	8.1%
Perry	$83,762	$19,395	23.2%	2	14.1%	0	1.8%	7	7.2%
Pickett	$62,508	$4,221	6.8%	0	0.1%	0	3.3%	2	3.3%
Polk	$241,917	$129,683	53.6%	2	44.0%	0	1.8%	6	7.8%
Putnam	$496,473	$359,404	72.4%	5	6.5%	0	1.1%	9	64.8%
Rhea	$210,380	$62,414	29.7%	4	23.4%	0	2.2%	9	4.1%
Roane	$460,082	$205,862	44.7%	4	35.0%	1	4.7%	7	5.0%
Robertson	$330,487	$149,989	45.4%	5	31.0%	0	1.8%	6	12.6%
Rutherford	$600,136	$353,372	58.9%	5	53.0%	1	1.4%	10	4.6%
Scott	$226,407	$60,286	26.6%	2	20.0%	0	3.3%	9	3.3%
Sequatchie	$50,098	$13,140	26.2%	1	13.4%	0	6.7%	3	6.2%
Sevier	$304,346	$140,079	46.0%	3	18.3%	0	5.7%	5	22.0%
Shelby	$8,022,797	$4,585,072	57.2%	7	35.1%	4	4.2%	13	17.9%
Smith	$262,258	$50,172	19.1%	4	15.2%	1	1.2%	7	2.8%

(continued)

Table 3-30. Lab Coverage by County—Required Bidders: $200,000 Cutoff (continued)

		Labs Meeting $200,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Stewart	$33,917	$9,279	27.4%	1	2.3%	0	0.6%	5	24.5%
Sullivan	$2,724,474	$2,089,406	76.7%	5	36.9%	1	9.9%	9	29.9%
Sumner	$559,962	$330,833	59.1%	6	23.0%	0	3.0%	11	33.1%
Tipton	$533,997	$361,457	67.7%	5	17.3%	1	45.4%	4	5.0%
Trousdale	$43,418	$14,006	32.3%	3	25.4%	0	0.5%	6	6.3%
Unicoi	$211,132	$68,153	32.3%	2	24.5%	0	3.1%	3	4.6%
Union	$23,592	$13,697	58.1%	2	10.9%	1	4.7%	5	42.4%
Van Buren	$21,426	$18,047	84.2%	2	36.0%	0	2.0%	2	46.3%
Warren	$524,760	$382,029	72.8%	5	30.0%	1	5.2%	6	37.5%
Washington	$1,801,308	$1,160,730	64.4%	5	42.6%	1	5.8%	9	16.0%
Wayne	$80,237	$25,390	31.6%	2	17.5%	1	4.7%	7	9.5%
Weakley	$289,501	$42,122	14.6%	3	9.7%	0	4.3%	4	0.6%
White	$159,732	$86,540	54.2%	3	36.3%	0	2.6%	7	15.3%
Williamson	$530,124	$418,112	78.9%	5	21.8%	1	5.8%	11	51.3%
Wilson	$473,324	$407,594	86.1%	6	44.9%	1	1.4%	10	39.8%
TN BEN & PERF	$1,062,603			9		5		18	
Total	$54,817,377			326		57		664	

Source: 1994 Lab and Outpatient SAFs.

Table 3-31. Lab Coverage by County—Required Bidders: $100,000 Cutoff
Lowering the cutoff necessarily increases the number of required bidders serving each county.

		Labs Meeting $100,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Anderson	$1,013,346	$839,968	82.9%	5	53.6%	2	3.3%	17	25.9%
Bedford	$201,186	$185,111	92.0%	3	22.4%	1	0.7%	14	68.9%
Benton	$87,254	$25,882	29.7%	4	16.4%	0	0.3%	11	12.9%
Bledsoe	$48,117	$4,476	9.3%	1	1.7%	0	1.0%	8	6.6%
Blount	$819,974	$726,170	88.6%	6	15.4%	2	3.6%	16	69.5%
Bradley	$654,323	$417,272	63.8%	8	22.0%	2	14.8%	14	26.9%
Campbell	$499,713	$408,431	81.7%	3	9.5%	4	7.3%	14	64.9%
Cannon	$126,566	$81,994	64.8%	6	52.6%	2	7.8%	5	4.4%
Carroll	$361,920	$204,838	56.6%	5	8.3%	3	17.9%	10	30.3%
Carter	$331,192	$318,127	96.1%	3	4.6%	2	2.9%	8	88.6%
Cheatham	$115,492	$39,308	34.0%	5	10.1%	0	0.3%	12	23.6%
Chester	$19,546	$7,087	36.3%	1	2.2%	1	22.5%	3	11.6%
Claiborne	$269,754	$220,716	81.8%	4	18.9%	1	2.6%	10	60.4%
Clay	$63,511	$15,002	23.6%	4	15.6%	1	1.3%	4	6.7%
Cocke	$293,682	$181,880	61.9%	4	19.2%	0	5.8%	11	36.9%
Coffee	$360,775	$265,470	73.6%	4	48.2%	2	0.9%	14	24.4%
Crockett	$84,866	$28,880	34.0%	1	4.1%	1	24.0%	3	6.0%
Cumberland	$365,464	$282,462	77.3%	5	13.5%	2	39.3%	16	24.5%
Davidson	$7,287,464	$5,376,317	73.8%	10	37.3%	9	9.2%	32	27.3%
DeKalb	$146,216	$65,261	44.6%	4	26.9%	0	9.0%	9	8.7%

(continued)

Table 3-31. Lab Coverage by County—Required Bidders: $100,000 Cutoff (continued)

		Labs Meeting $100,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Decatur	$213,631	$210,117	98.4%	5	11.9%	2	0.4%	10	86.0%
Dickson	$309,031	$268,346	86.8%	7	25.6%	2	5.3%	8	55.9%
Dyer	$438,378	$349,983	79.8%	3	2.4%	1	51.4%	5	26.0%
Fayette	$92,258	$21,891	23.7%	2	3.0%	1	6.9%	5	13.9%
Fentress	$170,125	$149,100	87.6%	4	1.9%	1	1.0%	9	84.7%
Franklin	$429,683	$336,212	78.2%	2	49.3%	1	3.0%	12	25.9%
Gibson	$219,733	$45,265	20.6%	3	8.9%	0	3.1%	6	8.5%
Giles	$262,431	$189,514	72.2%	3	31.7%	1	4.0%	10	36.5%
Grainger	$63,729	$59,662	93.6%	2	47.3%	0	1.0%	12	45.3%
Greene	$571,039	$380,904	66.7%	4	38.5%	3	13.1%	12	15.1%
Grundy	$46,710	$39,974	85.6%	2	35.6%	0	5.7%	9	44.3%
Hamblen	$704,594	$533,563	75.7%	7	37.0%	3	21.5%	18	17.3%
Hamilton	$4,281,444	$3,288,726	76.8%	7	34.7%	9	15.7%	21	26.4%
Hancock	$57,788	$55,973	96.9%	3	45.3%	0	8.9%	9	42.7%
Hardeman	$501,271	$165,792	33.1%	4	26.9%	5	5.3%	5	0.9%
Hardin	$231,742	$171,622	74.1%	2	0.8%	0	2.1%	10	71.2%
Hawkins	$282,317	$257,936	91.4%	5	29.3%	2	4.2%	11	57.9%
Haywood	$145,604	$57,226	39.3%	4	26.6%	0	2.5%	5	10.2%
Henderson	$133,348	$61,950	46.5%	1	3.9%	2	11.5%	10	31.0%
Henry	$267,585	$121,803	45.5%	2	7.2%	0	4.3%	10	34.0%

(continued)

Table 3-31. Lab Coverage by County—Required Bidders: $100,000 Cutoff (continued)

		Labs Meeting $100,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Hickman	$246,293	$94,484	38.4%	5	10.2%	0	2.3%	7	25.9%
Houston	$83,466	$25,159	30.1%	5	22.2%	1	3.0%	6	5.0%
Humphreys	$212,625	$93,631	44.0%	6	30.2%	1	3.1%	6	10.8%
Jackson	$80,754	$21,812	27.0%	1	0.3%	0	0.1%	6	26.6%
Jefferson	$292,360	$227,713	77.9%	6	23.4%	2	5.5%	11	49.1%
Johnson	$152,587	$66,529	43.6%	2	28.7%	1	5.9%	5	9.0%
Knox	$4,772,561	$3,461,676	72.5%	11	26.1%	7	13.8%	19	32.7%
Lake	$7,032	$6,107	86.8%	1	27.3%	0	0.1%	4	59.5%
Lauderdale	$217,572	$111,428	51.2%	4	31.2%	3	14.2%	7	5.8%
Lawrence	$409,053	$369,267	90.3%	2	56.9%	1	1.0%	12	32.4%
Lewis	$26,479	$23,470	88.6%	2	15.2%	0	0.4%	10	73.1%
Lincoln	$336,757	$207,756	61.7%	6	26.6%	2	5.0%	11	30.1%
Loudon	$280,459	$258,375	92.1%	3	27.3%	2	2.1%	9	62.8%
Macon	$297,531	$216,711	72.8%	5	23.5%	2	3.9%	15	61.6%
Madison	$1,259,438	$950,672	75.5%	1	0.5%	0	0.4%	9	12.5%
Marion	$164,535	$130,110	79.1%	5	66.5%	1	0.8%	9	5.6%
Marshall	$316,004	$291,940	92.4%	9	16.3%	3	36.3%	7	22.9%
Maury	$889,442	$737,674	82.9%	2	19.0%	1	2.5%	7	57.6%
McMinn	$480,534	$427,592	89.0%	3	31.3%	1	1.2%	12	59.8%
McNairy	$111,775	$14,984	13.4%	6	35.4%	2	2.0%	11	45.5%

(continued)

Table 3-31. Lab Coverage by County—Required Bidders: $100,000 Cutoff (continued)

		Labs Meeting $100,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Meigs	$21,376	$18,191	85.1%	0	0.0%	0	0.0%	13	85.1%
Monroe	$242,151	$226,075	93.4%	3	16.3%	1	4.3%	11	72.8%
Montgomery	$506,013	$445,508	88.0%	6	35.2%	2	1.9%	11	51.0%
Moore	$2,106	$2,106	100.0%	0	0.0%	0	0.0%	5	100.0%
Morgan	$138,911	$115,296	83.0%	3	60.8%	0	4.0%	10	18.2%
Obion	$149,228	$34,063	22.8%	3	16.2%	0	4.7%	7	2.0%
Overton	$122,378	$18,002	14.7%	2	0.5%	2	5.7%	5	8.6%
Perry	$83,762	$80,137	95.7%	2	14.1%	0	1.8%	8	79.7%
Pickett	$62,508	$5,053	8.1%	0	0.1%	0	3.3%	3	4.6%
Polk	$241,917	$131,060	54.2%	2	44.0%	2	2.2%	7	7.9%
Putnam	$496,473	$367,593	74.0%	6	6.5%	1	1.2%	14	66.3%
Rhea	$210,380	$176,858	84.1%	5	23.5%	0	2.2%	11	58.4%
Roane	$460,082	$209,881	45.6%	5	35.1%	2	4.8%	11	5.7%
Robertson	$330,487	$276,324	83.6%	6	31.9%	1	2.3%	9	49.4%
Rutherford	$600,136	$484,459	80.7%	7	53.6%	2	1.6%	13	25.6%
Scott	$226,407	$175,890	77.7%	2	20.0%	1	3.4%	12	54.3%
Sequatchie	$50,098	$14,917	29.8%	1	13.4%	0	6.7%	4	9.7%
Sevier	$304,346	$257,048	84.5%	4	18.4%	0	5.8%	10	60.3%
Shelby	$8,022,797	$5,944,753	74.1%	10	35.1%	13	16.9%	20	22.1%
Smith	$262,258	$217,878	83.1%	5	15.9%	2	1.9%	9	65.3%

(continued)

Table 3-31. Lab Coverage by County—Required Bidders: $100,000 Cutoff (continued)

		Labs Meeting $100,000 Cutoff							
				Independent Labs		POL		Hospital Labs	
County	Total Demonstration Test Allowed Charges	Allowed Charges	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share	Number Serving County ($>100)	Share
Stewart	$33,917	$9,605	28.3%	1	2.3%	0	0.6%	6	25.5%
Sullivan	$2,724,474	$2,145,663	78.8%	6	36.9%	6	11.0%	15	30.8%
Sumner	$559,962	$375,602	67.1%	7	23.4%	2	4.0%	16	39.7%
Tipton	$533,997	$450,113	84.3%	6	17.5%	5	45.7%	6	21.0%
Trousdale	$43,418	$15,817	36.4%	4	27.2%	1	0.9%	8	8.4%
Unicoi	$211,132	$173,090	82.0%	2	24.5%	1	3.5%	4	54.0%
Union	$23,592	$17,901	75.9%	2	10.9%	1	4.7%	7	60.3%
Van Buren	$21,426	$18,342	85.6%	3	37.3%	0	2.0%	2	46.4%
Warren	$524,760	$386,671	73.7%	6	30.1%	4	5.9%	7	37.6%
Washington	$1,801,308	$1,281,070	71.1%	6	42.6%	3	12.1%	13	16.5%
Wayne	$80,237	$36,489	45.5%	2	17.5%	1	4.7%	10	23.3%
Weakley	$289,501	$51,626	17.8%	3	9.7%	1	4.5%	8	3.7%
White	$159,732	$90,460	56.6%	4	38.2%	1	2.8%	8	15.7%
Williamson	$530,124	$426,020	80.4%	6	22.6%	2	6.0%	16	51.8%
Wilson	$473,324	$424,053	89.6%	7	47.3%	2	1.5%	15	40.8%
TN BEN & PERF	$1,062,603			13		18		24	
Total	$54,817,377			393		175		969	

Source: 1994 Lab and Outpatient SAFs.

of less than 25 percent of all demonstration allowed charges. Overall, the coverage by labs meeting the $200,000 cutoff was less than 50 percent in about half of the counties. However, all of these counties had allowed charges of less than $500,000.

The only difference between Table 3-30 and Table 3-31 is that the cutoff is defined at the $100,000 level in Table 3-31. On average, the counties were served by 4 independent labs, 1.7 POLs, and 9.9 hospital labs that met the $100,000 cutoff. Using the $100,000 cutoff, only 28 counties had coverage of less than 50 percent. Of these counties with low coverage, only one had allowed charges of greater than $200,000.

Overall, the coverage under each cutoff was fairly complete. All counties were served by at least one lab under each cutoff. Only the north-central region of Tennessee between Knoxville and Nashville and the far northwest corner of Tennessee appear to have had relatively low coverage. However, neither of these regions had a large amount of allowed charges, and they are less than 100 miles from either Nashville or Memphis.

Our findings on the number of labs serving each county must be caveated because the hospital data did not include information on the location of referring physicians. To mitigate this problem, we developed the algorithm for assigning hospital tests to counties described earlier; however, the resulting assignments probably are not as accurate as the specimen origin data for independent labs and POLs.

3.2 NORTH CAROLINA

3.2.1 High-Volume Test List

An important question for the design of the demonstration project is whether the distribution of procedures within a local market is similar to the national distribution of tests. Table 3-32 compares the rankings for North Carolina procedures based on allowed charges to national rankings based on allowed charges. The North Carolina rankings were based on specimens drawn by providers in North Carolina. Only claims processed by Medicare Part B providers were included in both rankings; thus, the rankings do not include Part B hospital outpatient tests.

Table 3-32. Top 100 Procedures in the United States and North Carolina, Ranked by Allowed Charges, 1994

Procedures with high allowed charges nationally generally had high allowed charges in North Carolina.

HCPCS	Procedure Name	U.S. Rank	North Carolina Rank
80019	19 blood/urine tests	1	1
85025	Automated hemogram	2	3
G0001	Drawing blood for specimen	3	7
80092	Thyroid panel w/TSH	4	2
84443	Assay thyroid stim hormone	5	9
83718	Blood lipoprotein assay	6	4
85024	Automated hemogram	7	8
84153	Prostate specific antigen	8	5
80061	Lipid panel	9	18
81000	Urinalysis, nonauto, w/scope	10	6
85610	Prothrombin time	11	10
80162	Assay for digoxin	12	11
83550	Iron binding test	13	101
87086	Urine culture, colony count	14	14
82728	Assay ferritin	15	32
80016	13-16 blood/urine tests	16	26
83036	Glycated hemoglobin test	17	17
82947	Assay quantitative, glucose	18	12
83540	Assay iron	19	88
84436	Assay, total thyroxine	20	19
85023	Automated hemogram	21	15
80018	17-18 blood/urine tests	22	34
80091	Thyroid panel	23	68
80007	7 clinical chemistry tests	24	20
82378	Carcinoembryonic antigen	25	40
83735	Assay magnesium	26	55
82607	Vitamin B-12	27	22
85651	RBC sed rate, nonauto	28	28
83970	Assay of parathormone	29	30
80002	1-2 clinical chemistry tests	30	48
80185	Assay for phenytoin	31	24
87186	Antibiotic sensitivity, MIC	32	50
82985	Glycated protein	33	13
82270	Test feces for blood	34	36

(continued)

Table 3-32. Top 100 Procedures in the United States and North Carolina, Ranked by Allowed Charges, 1994 (continued)

HCPCS	Procedure Name	U.S. Rank	North Carolina Rank
P9604	One-way allow prorated trip	35	96
86316	Immunoassay, tumor antigen	36	16
87088	Urine bacteria culture	37	21
88104	Microscopic exam of cells	38	42
86287	Hepatitis B (HBsAg)	39	75
85027	Automated hemogram	40	41
82746	Blood folic acid serum	41	39
86003	Allergen specific IgE	42	118
85029	Automated hemogram	43	85
80198	Assay for theophylline	44	35
80006	6 clinical chemistry tests	45	38
87070	Culture specimen, bacteria	46	58
82172	Apolipoprotein	47	59
83721	Blood lipoprotein assay	48	52
84480	Total assay, TT-3	49	76
80004	4 clinical chemistry tests	50	56
87184	Antibiotic sensitivity, each	51	29
81002	Urinalysis nonauto w/o scope	52	27
84439	Assay, free thyroxine	53	93
80003	3 clinical chemistry tests	54	45
82108	Assay, aluminum	55	104
84132	Assay serum potassium	56	37
85021	Automated hemogram	57	31
84479	Assay triiodothyronine (T-3)	58	23
85730	Thromboplastin time, partial	59	81
88173	Interpretation of smear	60	46
80058	Hepatic function panel	61	108
85102	Bone marrow biopsy	62	51
P9605	Routine venipuncture	63	238
85095	Bone marrow aspiration	64	54
84066	Assay prostate phosphatase	65	44
88180	Cell marker study	66	70
84165	Assay serum proteins	67	78
80005	5 clinical chemistry tests	68	72
82977	Assay of GGT	69	90

(continued)

Table 3-32. Top 100 Procedures in the United States and North Carolina, Ranked by Allowed Charges, 1994 (continued)

HCPCS	Procedure Name	U.S. Rank	North Carolina Rank
82948	Reagent strip/blood glucose	70	33
84478	Assay triglycerides	71	57
80156	Assay carbamazepine	72	63
85022	Automated hemogram	73	62
80050	General health panel	74	43
85097	Bone marrow interpretation	75	64
86422	Radioallergosorbent tests	76	196
80008	8 clinical chemistry tests	77	95
86291	Hepatitis BS antibody test	78	126
88108	Cytopathology	79	80
80012	12 clinical chemistry tests	80	47
82150	Assay of amylase	81	82
85595	Platelet count, automated	82	129
86235	Nuclear antigen antibody	83	103
P3000	Screen pap by tech w MD supv	84	427
83719	Blood lipoprotein assay	85	65
82784	Assay gammaglobulin IgM	86	87
84403	Assay total testosterone	87	79
86038	Antinuclear antibodies	88	71
86255	Fluorescent antibody; screen	89	121
85031	Manual hemogram, complete CBC	90	147
85007	Differential WBC count	91	110
82465	Assay serum cholesterol	92	53
87163	Special microbiology culture	93	98
85030	Automated hemogram	94	151
86592	Blood serology, qualitative	95	25
86302	Hepatitis C antibody	96	168
80009	9 clinical chemistry tests	97	84
84466	Transferrin	98	66
84520	Assay urea nitrogen	99	113
84134	Prealbumin	100	378
North Carolina Top 100 Not In the U.S. Top 100			
82330	Assay calcium	101	49
85014	Hematocrit	130	89
81003	Urinalysis, auto, w/o scope	110	99

(continued)

Table 3-32. Top 100 Procedures in the United States and North Carolina, Ranked by Allowed Charges, 1994 (continued)

HCPCS	Procedure Name	U.S. Rank	North Carolina Rank
North Carolina Top 100 Not In the U.S. Top 100			
88172	Evaluation of smear	133	74
82565	Assay creatinine	120	67
88107	Microscopic exam of cells	131	69
82803	Blood gases: pH, pO2 & pCO2	118	94
85018	Hemoglobin	109	73
86430	Rheumatoid factor test	111	61
84460	Alanine amino (ALT) (SGPT)	113	100
80194	Assay for quinidine	122	77
80010	19 Clinical chemistry tests	103	60
80184	Assay for phenobarbitol	106	83
82962	Glucose blood test	125	86
86329	Immunodiffusion	148	91
88150	Cytopathology, pap smear	107	92
85044	Reticulocyte count	123	97

Source: U.S.: 1994 Physician/Supplier Procedure Summary File; North Carolina: 1994 Lab SAF. "North Carolina" tests were identified based on specimen drawing site.

The national and North Carolina rankings are quite similar. The top 10 tests nationally are all ranked among the top 11 tests in North Carolina, and 83 procedures are in the top 100 in both lists. Three top 100 tests nationally (P9605, P3000, and 84134) do not make the top 200 in North Carolina. In contrast, all of the top 100 tests in North Carolina are ranked among the top 143 tests nationally.

Table 3-33 compares the national and North Carolina rankings for the preliminary list of demonstration tests. The table also shows allowed charges and the relative shares of independent labs and POLs for each procedure. As with the top 100 list, the national and North Carolina rankings for individual procedures are reasonably close, suggesting that North Carolina is fairly representative of the nation.

Other findings shown in the table include the following:

- Demonstration tests in North Carolina accounted for about 88 percent of the allowed charges for all lab procedures.

Table 3-33. Preliminary Demonstration Tests: U.S. and North Carolina
Demonstration tests had similar national and North Carolina rankings.

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges	Rank in North Carolina by Allowed Charges	North Carolina Allowed Charges ($)	Independent Lab Share (%)	POL Lab Share (%)
G0001	Drawing blood for specimen	3	7	2,484,295	31.03	68.97
P9604	One-way allow prorated trip	35	100	73,967	96.63	3.37
P9605	Routine venipuncture	63	250	5,776	73.56	26.44
80002	1-2 clinical chemistry tests	30	48	248,103	44.61	55.39
80003	3 clinical chemistry tests	54	45	257,663	62.26	37.74
80004	4 clinical chemistry tests	50	56	186,405	73.70	26.30
80005	5 clinical chemistry tests	68	72	124,490	61.66	38.34
80006	6 clinical chemistry tests	45	38	359,129	75.13	24.87
80007	7 clinical chemistry tests	24	20	656,164	60.04	39.96
80008	8 clinical chemistry tests	77	99	74,039	56.40	43.60
80009	9 clinical chemistry tests	97	88	88,161	78.11	21.89
80010	10 clinical chemistry tests	103	60	164,866	88.72	11.28
80012	12 clinical chemistry tests	80	47	249,357	52.67	47.33
80016	13-16 blood/urine tests	16	26	470,314	37.14	62.86
80018	17-18 blood/urine tests	22	34	388,337	52.74	47.26
80019	19 blood/urine tests	1	1	6,865,243	85.79	14.21
80050	General health panel	74	43	311,065	53.62	46.38
80058	Hepatic function panel	61	112	58,018	1.22	98.78
80061	Lipid panel	9	18	707,191	8.97	91.03
80091	Thyroid panel	23	68	133,905	78.68	21.32
80092	Thyroid panel w/TSH	4	2	5,528,000	90.74	9.26
80162	Assay for digoxin	12	11	1,467,736	88.99	11.01
80185	Assay for phenytoin	31	24	533,014	94.58	5.42
80198	Assay for theophylline	44	35	361,151	79.00	21.00
81000	Urinalysis, nonauto, w/scope	10	6	2,566,769	11.30	88.70
81002	Urinalysis nonauto w/o scope	52	27	460,005	19.31	80.69
81003	Urinalysis, auto, w/o scope	110	103	72,894	84.77	15.23
81005	Urinalysis	169	144	29,853	0.52	99.48
81015	Microscopic exam of urine	134	152	26,406	0.26	99.74
82150	Assay of amylase	81	86	88,706	61.40	38.60
82172	Apolipoprotein	47	59	169,458	48.30	51.70
82250	Assay bilirubin	345	337	2,074	31.57	68.43
82270	Test feces for blood	34	36	360,327	7.70	92.30
82310	Assay calcium	171	162	23,693	70.82	29.18
82330	Assay calcium	101	49	240,383	99.77	0.23
82378	Carcinoembryonic antigen	25	40	345,624	77.15	22.85

(continued)

Table 3-33. Preliminary Demonstration Tests: U.S. and North Carolina (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges	Rank in North Carolina by Allowed Charges	North Carolina Allowed Charges ($)	Independent Lab Share (%)	POL Lab Share (%)
82465	Assay serum cholesterol	92	53	224,869	45.01	54.99
82540	Assay creatine	297	301	3,110	28.85	71.15
82550	Assay CK (CPK)	112	135	33,323	59.45	40.55
82565	Assay creatinine	120	67	135,780	37.95	62.05
82570	Assay urine creatinine	235	209	10,056	88.29	11.71
82607	Vitamin B-12	27	22	570,812	92.35	7.65
82728	Assay ferritin	15	32	415,725	89.26	10.74
82746	Blood folic acid serum	41	39	348,796	95.43	4.57
82784	Assay gammaglobulin IgM	86	91	83,456	95.98	4.02
82947	Assay quantitative, glucose	18	12	1,157,809	28.69	71.31
82948	Reagent strip/blood glucose	70	33	396,275	1.50	98.50
82962	Glucose blood test	125	90	83,493	8.69	91.31
82977	Assay of GGT	69	94	79,660	45.80	54.20
82985	Glycated protein	33	13	1,094,898	98.29	1.71
83036	Glycated hemoglobin test	17	17	809,952	68.90	31.10
83520	Immunoassay, RIA	168	163	22,977	55.42	44.58
83540	Assay iron	19	92	82,968	88.92	11.08
83550	Iron binding test	13	105	71,393	95.08	4.92
83615	Lactate (LD) (LDH) enzyme	277	252	5,550	41.78	58.22
83690	Assay lipase	180	192	12,832	92.77	7.23
83718	Blood lipoprotein assay	6	4	4,634,867	89.56	10.44
83721	Blood lipoprotein assay	48	52	224,887	23.83	76.17
83735	Assay magnesium	26	55	206,626	77.27	22.73
83970	Assay of parathormone	29	30	447,045	99.38	0.62
84066	Assay prostate phosphatase	65	44	274,369	82.19	17.81
84075	Assay alkaline phosphatase	248	161	24,219	17.51	82.49
84100	Assay phosphorus	279	242	6,617	82.60	17.40
84132	Assay serum potassium	56	37	359,325	39.15	60.85
84153	Prostate specific antigen	8	5	2,752,586	78.77	21.23
84155	Assay protein	204	173	19,227	94.32	5.68
84165	Assay serum proteins	67	82	103,474	73.28	26.72
84295	Assay serum sodium	202	124	42,690	23.05	76.95
84436	Assay, total thyroxine	20	19	695,589	86.06	13.94
84439	Assay, free thyroxine	53	97	76,965	55.77	44.23
84443	Assay thyroid stim hormone	5	9	2,237,418	75.58	24.42
84450	Transferase (AST) (SGOT)	161	128	39,689	41.29	58.71

(continued)

Table 3-33. Preliminary Demonstration Tests: U.S. and North Carolina (continued)

Procedure Code	Procedure Name	Rank in U.S. by Allowed Charges	Rank in North Carolina by Allowed Charges	North Carolina Allowed Charges ($)	Independent Lab Share (%)	POL Lab Share (%)
84460	Alanine amino (ALT) (SGPT)	113	104	72,275	76.17	23.83
84466	Transferrin	98	66	140,385	99.92	0.08
84478	Assay triglycerides	71	57	186,354	59.66	40.34
84479	Assay triiodothyronine (T-3)	58	23	537,014	92.99	7.01
84520	Assay urea nitrogen	99	117	50,831	45.47	54.53
84550	Assay blood uric acid	182	131	37,368	52.08	47.92
85007	Differential WBC count	91	114	54,630	11.20	88.80
85013	Hematocrit	244	168	22,111	0.50	99.50
85014	Hematocrit	130	93	81,825	28.53	71.47
85018	Hemoglobin	109	73	121,811	23.52	76.48
85021	Automated hemogram	57	31	446,687	27.54	72.46
85022	Automated hemogram	73	62	159,344	3.77	96.23
85023	Automated hemogram	21	15	853,174	14.09	85.91
85024	Automated hemogram	7	8	2,288,482	14.31	85.69
85025	Automated hemogram	2	3	4,697,186	85.53	14.47
85027	Automated hemogram	40	41	331,617	14.83	85.17
85029	Automated hemogram	43	89	85,898	3.51	96.49
85030	Automated hemogram	94	159	24,561	0.94	99.06
85031	Manual hemogram, complete CBC	90	151	26,510	55.90	44.10
85044	Reticulocyte count	123	101	73,555	83.24	16.76
85048	White blood cell (WBC) count	183	143	30,087	25.42	74.58
85610	Prothrombin time	11	10	1,531,275	61.52	38.48
85651	RBC sed rate, nonauto	28	28	453,719	38.72	61.28
85730	Thromboplastin time, partial	59	85	97,779	77.31	22.69
86255	Fluorescent antibody; screen	89	125	42,464	73.29	26.71
86287	Hepatitis B (HBsAg)	39	75	106,819	99.50	0.50
86291	Hepatitis BS antibody test	78	130	38,101	99.33	0.67
86316	Immunoassay, tumor antigen	36	16	823,667	37.21	62.79
86430	Rheumatoid factor test	111	61	164,383	81.59	18.41
86592	Blood serology, qualitative	95	25	514,726	99.40	0.60
	Total—Demonstration Tests			58,066,544	66.60	33.40
	Total—Demonstration Tests (w/o G0001)			55,582,249	68.19	31.81
	Total—All Tests			66,223,896	65.53	34.47

Source: U.S.: 1994 Physician/Supplier Procedure Summary File; North Carolina: 1994 Lab SAF. "North Carolina" was identified based on specimen drawing site.

- Independent labs accounted for 66.6 percent of allowed charges for the demonstration tests.
- If drawing blood for specimen (G0001) was excluded, independent labs' share of allowed charges increased to 68.2 percent. Physicians perform an overwhelming (69 percent) share of this common procedure.
- Independent lab shares range all the way from less than one percent to nearly 100 percent. Some of the procedures for which independent labs have low shares must be included as demonstration tests because they are close substitutes for procedures that are commonly performed by independent labs. For example, independent labs perform relatively few automated hemograms with procedure codes equal to 85024 (14 percent) or 85030 (one percent), but they produce nearly 86 percent of all automated hemograms coded as 85025, and the latter code has the third-highest allowed charges in the state.

3.2.2 Locational Analyses

As discussed previously in Section 3.1.2, a key issue for the demonstration design is how to operationally define which tests are included in the demonstration area.

We performed the same detailed locational analyses of the North Carolina extract from the Lab SAF as we performed on the Tennessee extract. Claims were included in the North Carolina extract if

- the lab performing the test was located in North Carolina,
- the beneficiary lived in North Carolina, or
- the referring physician who drew the specimen practiced in North Carolina.

We performed separate locational analyses on

- specimens drawn in the state,
- beneficiaries living in the state, and
- labs located in the state.

North Carolina Specimens

The analytic universe for this subsection was the set of all lab claims that originated from a specimen drawn in North Carolina in 1994. Medicare Part B claims include a data field for the referring provider's Unique Provider Identification Number (UPIN). We linked this UPIN to the referring provider's ZIP code using a file provided by HCFA. This link was not perfect because some providers operated in more than one state; when this occurred, we assigned the location to the provider's modal ZIP code, or, in the case of modal ties, to the first ZIP code appearing for the physician.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests resulting from specimens drawn in North Carolina was 6.9 million for all procedures and 6.3 million for demonstration tests.

Table 3-34 shows the lab location where specimens drawn in Tennessee were processed in 1994. Based on all procedures, 93 percent of specimens drawn in North Carolina were processed in labs located in North Carolina. About 7 percent of North Carolina specimens were shipped out-of-state. The distribution was similar for demonstration tests, which accounted for 87 percent of the total allowed charges for specimens originating in North Carolina.

Table 3-34. Allowed Charges by Lab Location for Specimens Drawn in North Carolina
Most specimens drawn in North Carolina were analyzed in North Carolina, although some out-of-state transport occurred.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
North Carolina	61.7	93.2	54.1	93.1
Tennessee	1.2	1.7	1.0	1.8
Florida	0.5	0.8	0.5	0.8
Georgia	0.3	0.4	0.2	0.4
South Carolina	0.3	0.4	0.2	0.4
Virginia	0.4	0.5	0.3	0.5
Other States	1.9	3.0	1.7	3.0
Total	$66.3	100.0%[a]	$58.0	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.
Source: 1994 Lab SAF.

Table 3-35 shows the distribution, by beneficiary residence, of specimens drawn in North Carolina. Most (88 percent) of the specimens drawn in North Carolina were drawn from North Carolina residents. North Carolina borders on four states, and each

Table 3-35. Allowed Charges by Beneficiary Residence for Specimens Drawn in North Carolina
Most specimens drawn in North Carolina were drawn from in-state beneficiaries, but about 10 percent were drawn from beneficiaries in other states.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
North Carolina	58.4	88.3	51.2	88.2
Florida	0.8	1.2	0.7	1.2
Georgia	0.3	0.5	0.3	0.5
South Carolina	1.6	2.4	1.4	2.3
Tennessee	2.3	3.4	2.1	3.6
Virginia	0.8	1.2	0.7	1.2
Other States	2.0	3.0	1.8	3.0
Total	$66.2	100.0%	$58.2	100.0%

Source: 1994 Lab SAF.

of these states accounted for 0.5 to 3.4 percent of the allowed charges associated with specimens drawn in North Carolina. Another one percent came from Florida residents. Thus, border-crossing into North Carolina was fairly common. The distribution of North Carolina specimens by beneficiary residence for demonstration tests was similar to the distribution for all procedures.

Over 90 percent of the claims for lab tests originating from North Carolina were actually processed by CIGNA, as the Medicare Part B carrier for North Carolina (Table 3-36). This differed markedly from Tennessee, where nearly 30 percent of the claims for Tennessee specimens were processed by out-of-state carriers. CIGNA-Tennessee processed about 1.7 percent and the Railroad Board processed about 1.5 percent of the allowed charges originating from North Carolina specimens, and the remaining 4 percent of allowed charges were processed by other carriers. Once again, the distribution for demonstration tests was similar to the distribution for all procedures.

Table 3-36. Allowed Charges by Medicare Carrier for Specimens Drawn in North Carolina
Over 90 percent of the allowed charges resulting from specimens drawn in North Carolina were processed by the North Carolina carrier.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
CIGNA-North Carolina	61.2	92.4	53.6	92.3
CIGNA-Tennessee	1.1	1.7	1.0	1.7
Railroad Board	1.0	1.5	0.9	1.5
Other Carriers	2.9	4.4	2.6	4.5
Total	$66.2	100.0%	$58.1	100.0%

Source: 1994 Lab SAF.

North Carolina Beneficiaries

The analytic universe for this subsection was the set of all lab claims for North Carolina beneficiaries in 1994. The Lab SAF contains a variable for beneficiary residence.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests performed on Tennessee beneficiaries was 6.2 million for all procedures and 5.6 million for demonstration tests.

Table 3-37 shows the lab location where North Carolina beneficiaries' lab tests were performed. About 98 percent of North Carolina beneficiaries' lab tests were performed in North Carolina. About 1 percent were performed in Tennessee, and about 1 percent were performed in other states. Thus, virtually all tests on North Carolina beneficiaries were performed by North Carolina labs. In contrast, about 13 percent of tests on Tennessee beneficiaries were performed in out-of-state labs. Demonstration tests, which accounted for about 88 percent of all lab allowed charges for North Carolina beneficiaries, had nearly the same distribution by lab location as all procedures.

Table 3-38 shows the state where specimens from North Carolina beneficiaries were drawn. Almost 99.5 percent of North Carolina beneficiaries' specimens were drawn by providers with UPINs in

Table 3-37. Allowed Charges by Lab Location for Tests Performed on North Carolina Beneficiaries
Most tests on North Carolina beneficiaries were performed in North Carolina.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
North Carolina	57.4	97.7	50.3	97.7
Tennessee	0.7	1.2	0.6	1.2
Other States	0.7	1.1	0.6	1.1
Total	$58.7	100.0%	$51.5	100.0%

Source: 1994 Lab SAF.

Table 3-38. Allowed Charges by State Where Specimens Were Drawn from North Carolina Beneficiaries
Almost all of North Carolina beneficiaries had their specimens drawn in-state.

State Where Specimen Was Drawn	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
North Carolina	58.4	99.5	51.2	99.5
Tennessee	0.3	0.4	0.2	0.4
Other States	0.1	0.1	<0.1	0.1
Total	$58.8	100.0%	$51.4	100.0%

Source: 1994 Lab SAF.

North Carolina. Just 0.5 percent of North Carolina beneficiaries had specimens drawn in other states. The distribution for demonstration tests is similar to the distribution for all procedures.

About 97 percent of allowed charges for North Carolina beneficiaries were processed by CIGNA-North Carolina (Table 3-39). Another 1 percent was processed by CIGNA-Tennessee, and 1.5 percent were processed by the Railroad Board. The remaining 0.3 percent of claims were processed by other carriers. The distribution for demonstration tests was virtually the same as the distribution for all procedures. As with carrier processing of specimens, the results for North Carolina beneficiaries differed markedly from the corresponding results for Tennessee beneficiaries, where out-of-state processing was common.

Table 3-39. Allowed Charges by Medicare Carrier for North Carolina Beneficiaries
Only 3 percent of lab claims for North Carolina beneficiaries were not processed by the North Carolina Part B carrier.

Location	All Procedures		Demonstration Tests	
	$ (Million)	%	$ (Million)	%
CIGNA-North Carolina	57.0	97.0	50.0	97.0
CIGNA-Tennessee	0.7	1.2	0.6	1.2
Railroad Board	0.9	1.5	0.8	1.5
Other Carriers	0.2	0.3	0.1	0.3
Total	$58.8	100.0%	$51.5	100.0%

Source: 1994 Lab SAF.

North Carolina Labs

The analytic universe for this subsection was all tests performed by laboratories located in North Carolina in 1994.

In the tables that follow, we present allowed charges for all tests and for the subset of demonstration tests. Test volume is not shown because its percentages closely paralleled the percentages for allowed charges. The total volume of tests performed in Tennessee labs was 8.6 million for all procedures and 7.7 million for demonstration tests.

About 69 percent of the allowed charges paid to North Carolina labs originated from specimens drawn in North Carolina (Table 3-40). Nine percent were drawn in North Carolina, and the remaining 22 percent were drawn in other states. North Carolina labs analyzed a slightly higher share (71 percent versus 69 percent) of in-state specimens for demonstration tests than they analyzed for all procedures.

North Carolina beneficiaries accounted for about 64 percent of all allowed charges paid to North Carolina labs (Table 3-41). Six other states (Florida, Georgia, South Carolina, Virginia, Tennessee, and West Virginia) each accounted for about one percent or more of the allowed charges paid to North Carolina labs, with Tennessee, South Carolina, and Virginia each contributing more than 6 percent. The remaining states accounted for 4 percent of allowed charges paid to North Carolina labs. Again, North Carolina performed a slightly higher percentage of demonstration tests than all procedures on North Carolina beneficiaries.

Table 3-40. Allowed Charges by Specimen Origin for North Carolina Labs
About 31 percent of the specimens tested by North Carolina labs originated out-of-state.

	All Procedures		Demonstration Tests	
Location	$ (Million)	%	$ (Million)	%
North Carolina	61.7	69.2	54.1	71.0
Tennessee	8.1	9.1	6.8	8.9
Other States	19.4	21.7	15.2	20.0
Total	$89.2	100.0%	$76.1	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.
Source: 1994 Lab SAF.

Table 3-41. Allowed Charges by Beneficiary Residence for North Carolina Labs
Out-of-state beneficiaries accounted for about 36 percent of North Carolina lab allowed charges.

	All Procedures		Demonstration Tests	
Location	$ (Million)	%	$ (Million)	%
North Carolina	57.4	64.3	50.3	66.1
Tennessee	9.6	10.7	8.2	10.8
Florida	0.7	0.9	0.5	0.6
Georgia	2.7	3.0	2.4	3.1
South Carolina	8.2	9.2	7.3	9.5
Virginia	5.5	6.1	4.6	6.0
West Virginia	1.4	1.6	1.2	1.5
Other States	3.7	4.2	1.8	2.3
Total	$89.2	100.0%	$76.3	100.0%[a]

[a] Percentage may not add to 100 percent due to rounding.
Source: 1994 Lab SAF.

The large number of out-of-state specimens and out-of-state beneficiaries' tests analyzed by North Carolina labs represent a substantial inflow of tests to North Carolina labs. The inflow of out-of-state tests to North Carolina labs was much greater than the outflow of North Carolina specimens to out-of-state labs (see Table 3-33). Similarly, the inflow of out-of-state beneficiaries' tests to North Carolina labs was much greater than the outflow of North Carolina beneficiary tests to out-of-state labs (see Table 3-37).

Roche Biomedical Labs (now part of LabCorp) operates its national reference laboratory in North Carolina; the presence of this lab largely explains the net inflow of tests into North Carolina. Its presence is also consistent with the finding that the shares of in-state specimens and beneficiaries tested by North Carolina labs were higher for demonstration tests than the shares for all procedures. The relatively common and routine demonstration tests are more likely to be performed in state than esoteric tests that are typically sent to national reference labs.

About 98 percent of allowed charges paid to North Carolina labs were processed by CIGNA-North Carolina (Table 3-42). The Railroad Board paid 1.9 percent to North Carolina labs, and other carriers processed the remaining 0.3 percent. The latter number is perhaps surprising, because labs—with the exception of SmithKline Beecham and Roche affiliates—are supposed to submit claims to the carrier in their jurisdiction.

Table 3-42. Allowed Charges by Medicare Carrier for North Carolina Labs
About one-fourth of lab claims for North Carolina labs were not processed by the North Carolina Part B carrier.

	All Procedures		Demonstration Tests	
Location	$ (Million)	%	$ (Million)	%
CIGNA-North Carolina	87.2	97.8	74.4	97.8
Railroad Board	1.7	1.9	1.5	2.0
Other Carriers	0.3	0.3	0.2	0.2
Total	$89.2	100.0%	$76.1	100.0%

Source: 1994 Lab SAF.

Coverage by County

One of the goals of the demonstration project is to ensure that competitive bidding does not significantly impact beneficiary access to care. Table 3-43, which is based on data from the 1994 Lab SAF, provides information on lab coverage for each of the 100 counties in North Carolina. Urban/rural status, allowed charges, and the county share of statewide allowed charges are shown for each county. The numbers and market shares—based on allowed charges—of independent labs and POLs and other labs are also

Table 3-43. Lab Coverage by County: North Carolina
Counties with high allowed charges were served by greater numbers of both independent labs and POLs.

				Independent Labs		POLs and Other Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County	Share of Lab Allowed Charges in County (%)	Number Serving County	Share of Lab Allowed Charges in County (%)
Alamance	Urban	1,488,329	2.25	6	78.31	48	21.69
Alexander	Urban	176,155	0.27	4	89.39	8	10.61
Alleghany	Rural	156,223	0.24	2	77.55	8	22.45
Anson	Rural	173,936	0.26	3	69.05	17	30.95
Ashe	Rural	216,394	0.33	4	60.02	17	39.98
Avery	Rural	96,506	0.15	4	38.26	13	61.74
Beaufort	Rural	352,792	0.53	4	36.11	21	63.89
Bertie	Rural	54,396	0.08	3	74.25	8	25.75
Bladen	Rural	431,883	0.65	4	61.49	27	38.51
Brunswick	Urban	566,782	0.86	5	74.82	28	25.18
Buncombe	Urban	2,050,582	3.10	10	55.15	71	44.85
Burke	Urban	652,619	0.99	6	63.61	32	36.39
Cabarrus	Urban	794,276	1.20	6	73.39	30	26.61
Caldwell	Urban	512,361	0.77	5	75.01	25	24.99
Camden	Rural	0	0.00	0	0.00	0	0.00
Carteret	Rural	321,862	0.49	3	88.00	18	12.00
Caswell	Rural	68,516	0.10	3	93.48	2	6.52
Catawba	Urban	1,451,957	2.19	10	63.02	41	36.98
Chatham	Urban	433,422	0.65	5	55.25	19	44.75
Cherokee	Rural	121,537	0.18	2	64.70	9	35.30
Chowan	Rural	42,623	0.06	2	17.73	12	82.27
Clay	Rural	6,732	0.01	2	41.63	3	58.37
Cleveland	Rural	990,291	1.50	8	60.53	24	39.47
Columbus	Rural	773,005	1.17	6	77.77	11	22.23
Craven	Rural	555,007	0.84	5	42.68	17	57.32
Cumberland	Urban	1,898,470	2.87	14	66.68	92	33.32
Currituck	Urban	2,755	0.00	1	5.58	2	94.42
Dare	Rural	31,606	0.05	1	37.69	5	62.31
Davidson	Urban	638,009	0.96	7	87.94	33	12.06
Davie	Urban	380,166	0.57	6	85.58	27	14.42
Duplin	Rural	397,839	0.60	4	88.15	22	11.85
Durham	Urban	2,827,122	4.27	16	38.21	127	61.79
Edgecombe	Urban	1,169,669	1.77	5	83.90	35	16.10
Forsyth	Urban	3,827,256	5.78	20	55.87	138	44.13

(continued)

Table 3-43. Lab Coverage by County: North Carolina (continued)

				Independent Labs		POLs and Other Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County	Share of Lab Allowed Charges in County (%)	Number Serving County	Share of Lab Allowed Charges in County (%)
Franklin	Urban	221,464	0.33	4	74.15	12	25.85
Gaston	Urban	1,377,526	2.08	8	72.71	61	27.29
Gates	Rural	1,393	0.00	0	0.00	1	100.00
Graham	Rural	132,837	0.20	4	54.60	6	45.40
Granville	Rural	341,546	0.52	6	75.36	25	24.64
Greene	Rural	329,341	0.50	4	27.70	10	72.30
Guilford	Urban	2,948,505	4.45	12	59.43	131	40.57
Halifax	Rural	682,140	1.03	7	76.44	15	23.56
Harnett	Rural	686,775	1.04	5	66.87	23	33.13
Haywood	Rural	292,983	0.44	5	32.00	16	68.00
Henderson	Rural	869,880	1.31	6	60.45	38	39.55
Hertford	Rural	212,938	0.32	4	62.89	17	37.11
Hoke	Rural	35,401	0.05	2	80.80	3	19.20
Hyde	Rural	11,210	0.02	0	0.00	1	100.00
Iredell	Rural	1,275,127	1.93	14	78.68	46	21.32
Jackson	Rural	120,683	0.18	4	20.07	18	79.93
Johnston	Urban	667,796	1.01	8	75.28	34	24.72
Jones	Rural	166,953	0.25	3	7.44	7	92.56
Lee	Rural	582,388	0.88	4	74.89	18	25.11
Lenior	Rural	562,907	0.85	8	40.42	26	59.58
Lincoln	Urban	293,129	0.44	8	73.26	16	26.74
Macon	Rural	224,584	0.34	2	78.31	14	21.69
Madison	Urban	181,707	0.27	8	62.45	18	37.55
Martin	Rural	170,132	0.26	5	94.35	8	5.65
McDowell	Rural	203,121	0.31	2	67.86	15	32.14
Mecklenburg	Urban	4,465,217	6.74	15	57.32	135	42.68
Mitchell	Rural	36,578	0.06	3	79.89	9	20.11
Montgomery	Rural	327,552	0.49	4	94.06	12	5.94
Moore	Rural	1,014,776	1.53	5	80.85	16	19.15
Nash	Urban	372,395	0.56	5	54.52	25	45.48
New Hanover	Urban	2,414,243	3.65	7	59.59	42	40.41
Northhampton	Rural	82,809	0.13	2	86.83	6	13.17
Onslow	Urban	418,600	0.63	4	75.61	23	24.39
Orange	Urban	1,143,275	1.73	17	47.36	78	52.64

(continued)

Table 3-43. Lab Coverage by County: North Carolina (continued)

				Independent Labs		POLs and Other Labs	
County	Urban/ Rural	Lab Allowed Charges from Specimens Drawn ($)	County Share of State Charges (%)	Number Serving County	Share of Lab Allowed Charges in County (%)	Number Serving County	Share of Lab Allowed Charges in County (%)
Pamlico	Rural	118,121	0.18	2	79.10	7	20.90
Pasquotank	Rural	226,803	0.34	3	50.42	23	49.58
Pender	Rural	100,050	0.15	4	60.69	8	39.31
Perquimans	Rural	25,967	0.04	2	4.05	6	95.95
Person	Rural	224,179	0.34	3	52.33	11	47.67
Pitt	Urban	1,610,810	2.43	12	55.53	84	44.47
Polk	Rural	175,708	0.27	4	35.98	22	64.02
Randolph	Urban	684,131	1.03	9	86.48	33	13.52
Richmond	Rural	391,592	0.59	6	61.08	20	38.92
Robeson	Rural	438,745	0.66	5	58.17	21	41.83
Rockingham	Rural	907,005	1.37	5	77.15	35	22.85
Rowan	Urban	1,234,268	1.86	6	86.66	32	13.34
Rutherford	Rural	539,542	0.81	5	74.60	35	25.40
Sampson	Rural	350,388	0.53	4	40.06	11	59.94
Scotland	Rural	144,594	0.22	5	71.49	17	28.51
Stanly	Rural	634,345	0.96	5	78.41	27	21.59
Stokes	Urban	311,627	0.47	8	62.36	30	37.64
Surry	Rural	744,703	1.12	4	80.54	25	19.46
Swain	Rural	213,363	0.32	6	69.83	12	30.17
Transylvania	Rural	261,219	0.39	6	73.05	16	26.95
Tyrrell	Rural	15,637	0.02	3	74.65	2	25.35
Union	Urban	478,860	0.72	6	69.31	24	30.69
Vance	Rural	456,556	0.69	8	28.77	34	71.23
Wake	Urban	3,232,903	4.88	14	66.47	132	33.53
Warren	Rural	91,428	0.14	2	88.21	7	11.79
Washington	Rural	134,536	0.20	3	79.71	8	20.29
Watauga	Rural	356,833	0.54	2	65.48	13	34.52
Wayne	Urban	856,616	1.29	6	73.14	26	26.86
Wilkes	Rural	423,628	0.64	4	88.40	20	11.60
Wilson	Rural	429,305	0.65	5	28.77	25	71.23
Yadkin	Urban	400,532	0.60	10	75.25	34	24.75
Yancey	Rural	12,813	0.02	2	70.10	5	29.90
		$66,223,896	100.00%		65.53%		34.47%

[a] Some observations were missing information on referring providers. If the test was performed on a North Carolina beneficiary by a North Carolina lab, we assumed that the specimen was drawn in North Carolina. County is based on the referring provider's ZIP code.

Source: 1994 Lab SAF.

shown. As with all of the tables based on the Lab SAF, hospital outpatient labs are excluded because their claims are processed by Medicare Part A fiscal intermediaries.

County origin refers to the origin of the test specimen and is found by mapping the referring provider's ZIP code to the county in which the ZIP code is located. The numbers of labs providing services to each county were based on CLIA lab numbers. These numbers may overstate the number of distinct labs providing services in each county because some labs have more than one CLIA number and there is no automated method for linking such labs. To avoid this problem, we used a manual inspection of the CLIA Provider File to link North Carolina independent labs with common ownership. We did not repeat this process for POLs and other labs because of the large number of such labs. To avoid counting a large number of labs that provided very small amounts of service to the county, we only counted a lab as providing service to the county if it provided more than $100 in allowed services to referring providers there. Specimen drawing fees were not counted toward the $100 limit.

The number of labs serving and independent lab shares varied widely among counties. Not surprisingly, the numbers of independent labs and POLs serving each county were closely related to allowed charges. Rural counties generally had low allowed charges, and consequently were served by fewer independent labs and POLs than urban counties. However, as allowed charges increased, rural counties were served by increasing numbers of both types of labs. This relationship was probably not as strong in North Carolina as it was in Tennessee.

The relationship between urban/rural status and independent lab share is less clear. Six counties had independent lab market shares of less than 15 percent; five of these counties were rural, and five had total allowed charges of less than $100,000. On the other hand, 13 counties had independent lab market shares greater than 85 percent; and 8 of these counties were rural.

The low number of labs—both independents and POLs—serving counties with low levels of allowed charges has important implications for the design of the demonstration project. Five counties were served by zero or one independent lab, and three counties were served by zero or one POL. All of these counties had very low allowed charges. The lab design must address how to treat counties that are currently being served by one or a few independent labs or POLs.

3.2.3 Market Shares

Table 3-44 shows market shares calculated from the 1994 Lab SAF for all labs that had more than $100,000 in allowed charges processed by Medicare Part B carriers (thus, hospital outpatient labs are excluded). The table also shows the number of counties served by the lab and lab type (I=independent; POL=physician office and other labs). The table includes all procedures performed on specimens drawn in North Carolina; county origin is defined as in the previous section. Shares for companies operating multiple labs are aggregated across labs and are updated to reflect current affiliations. Thus, the market share for LabCorp includes the 1994 shares of Allied Clinical, National Health, and Roche Biomedical Laboratories, and the market share for Corning Clinical Laboratories represents its recent acquisitions.

The North Carolina laboratory market is dominated by Lab A, which had a 56 percent share of all lab charges in the state and an 88 percent share of all independent lab allowed charges. Only two other labs had total market shares greater than one percent. Lab A was the only one of the Big Three labs to have a sizable presence in North Carolina. One of the other Big Three labs had a small presence, while the other Big Three lab was not operating in the state.

Led by Lab A, independent labs accounted for the top 4 and 6 of the top 10 labs in allowed charges. The 6 independent labs accounted for 60 percent of all allowed charges, while the four POLs in the top 10 accounted for about 3 percent of all allowed charges. POLs accounted for 30 of the remaining 37 labs with more than $100,000 in allowed charges.

Lab A was the only lab in the state that provided statewide coverage in 1994. It covered 98 out of the 100 counties in the state. Lab C covered 70 counties. After that, no other lab served more than half of the state's counties.

Table 3-44. North Carolina Market Shares and Coverage Areas by Lab
One lab dominated the North Carolina market, receiving 56 percent of total and 88 percent of independent lab allowed charges on North Carolina specimens.

Facility	Number of Counties Served	Allowed Charges ($)	Type of Lab	Market Share, All Labs (%)	Market Share, Independent Labs Only (%)
Lab A	98	36,847,302	I	55.6	87.8
Lab B	12	764,755	I	1.2	1.8
Lab C	70	711,095	I	1.1	1.7
Lab D	10	551,229	I	0.8	1.3
Lab E	9	485,277	POL	0.7	—
Lab F	13	471,510	POL	0.7	—
Lab G	4	466,019	POL	0.7	—
Lab H	5	421,701	POL	0.6	—
Lab I	15	407,720	I	0.6	1.0
Lab J	3	382,540	I	0.6	0.9
Lab K	4	363,710	POL	0.6	—
Lab L	8	325,500	I	0.5	0.8
Lab M	32	318,423	POL	0.5	—
Lab N	7	297,222	POL	0.5	—
Lab O	5	276,127	I	0.4	0.7
Lab P	6	243,548	POL	0.4	—
Lab Q	10	233,405	I	0.4	0.6
Lab R	6	232,337	POL	0.4	—
Lab S	4	216,867	POL	0.3	—
Lab T	8	203,879	I	0.3	0.5
Lab U	36	202,531	I	0.3	0.5
Lab V	8	196,725	POL	0.3	—
Lab W	7	189,480	POL	0.3	—
Lab X	1	169,547	POL	0.3	—
Lab Y	3	168,988	POL	0.3	—
Lab Z	2	150,136	POL	0.2	—
Lab AA	2	149,670	I	0.2	0.4
Lab BB	8	148,444	POL	0.2	—
Lab CC	1	144,957	POL	0.2	—
Lab DD	4	134,095	POL	0.2	—
Lab EE	6	127,208	POL	0.2	—
Lab FF	4	125,408	POL	0.2	—
Lab GG	4	117,817	POL	0.2	—
Lab HH	3	116,244	POL	0.2	—
Lab II	6	115,028	POL	0.2	—
Lab JJ	7	112,203	POL	0.2	—
Lab KK	6	110,749	POL	0.2	—
Lab LL	11	110,001	POL	0.2	—
Lab MM	3	107,980	POL	0.2	—
Lab NN	4	106,453	POL	0.2	—
Lab OO	3	106,077	POL	0.2	—
Lab PP	6	104,327	POL	0.2	—
Lab QQ	4	103,429	POL	0.2	—
Lab RR	14	103,248	I	0.2	0.3
Lab SS	8	102,811	POL	0.2	—
Lab TT	1	100,734	POL	0.2	—
Lab UU	3	100,419	POL	0.2	—
Total (labs with allowed charges greater than $100,000		47,744,875		72.8%	98.3%
Total, all labs		66,223,896			

Source: 1994 Lab SAF.

Implications

These results have important implications for the design of the demonstration project.

- Lab A's clear dominance of the North Carolina market limits the state's appeal as a demonstration location. With few major competitors, Lab A may have little incentive to bid aggressively for Medicare business.
- However, a large number of POLs occupied positions just below the top 10. It may make sense to require some of these labs to bid in the demonstration. The number of POLs required to bid by such a rule would depend on the exact cutoff for bidding.
- The county coverage reinforces the conclusion from the Tennessee analysis that few labs provide statewide coverage.
- The county coverage in 1994 suggests that the demonstration project should be designed so that bidding labs do not have to commit to providing statewide coverage and only one other lab covered more than half of the state's counties. Only one lab provided statewide coverage in 1994. The remaining labs would have had difficulty providing statewide coverage. If statewide coverage were required for the demonstration, these labs probably would have to form alliances or networks with other labs in order to form bidding coalitions.

Non-Medicare Business

Market shares calculated from the Lab SAF are especially useful because they account for specimen origin. However, these market shares are only based on Medicare claims. Market shares based on Medicare and non-Medicare volume can be calculated from the CLIA Provider File. But there is a tradeoff: the CLIA Provider File contains no information on patient origins. Thus, market shares calculated from the file are based on lab location.

Based on the CLIA file, Table 3-45 shows the shares for each of the major lab sectors in North Carolina in 1996. The distribution of nonwaived tests across sectors was fairly close to the national distribution (see Table 2-1 in Chapter 2), although the independent lab share—bolstered by the presence of Roche's (now part of LabCorp) national reference lab—is about 3 percentage points higher than the national average.

Table 3-45. Number of CLIA-Certified Facilities and Test Volume in North Carolina, by Lab Type
Although POLs are more numerous, hospital and independent labs provide the bulk of nonwaived tests, which are more complex than waived tests.

		Number of Tests (Millions)			Share (%)		
Type of Facility	Number of Facilities	Nonwaived	Waived	Total	Nonwaived	Waived	Total
Hospital	260	72.6	3.3	75.9	49.2	24.9	47.2
Independent Lab	92	45.5	0.7	46.2	30.8	5.0	28.7
POL	2,196	11.5	4.4	15.9	7.8	33.2	9.9
Other	1,402	18.0	4.9	22.9	12.2	37.0	14.2
Total	3,950	147.6	13.3	160.9	100.0%	100.0%[a]	100.0%

[a] May not sum to 100 percent due to rounding.

Source: 1996 CLIA Provider File.

Table 3-46 shows independent lab market shares in selected states based on lab location and nonwaived test volume data from the 1996 CLIA Provider File. One advantage of this dataset is its inclusion of volume data from both Medicare and non-Medicare patients. On the negative side, the public use CLIA Provider File provides no systematic way to identify all labs owned by a single company. To overcome this limitation, we manually matched affiliated CLIA provider numbers between independent labs within each state. We only performed the matching for independent labs, due to the large number of other labs in each state. Because of the effort involved in matching, we limited our analysis to North Carolina and all states bordering North Carolina.

Table 3-46 shows that the independent lab sector was much more concentrated in North Carolina than it was in surrounding states. Although the largest labs in Georgia, South Carolina, and Virginia all had independent lab sector market shares greater than 50 percent, none approached LabCorp's 90 percent independent lab market share in North Carolina. By comparison, Tennessee's independent lab sector appeared much more competitive.

3.2.4 Medicare Part B Clinical Lab Test Trends for North Carolina

Because of the volume of claims data, we only analyzed the North Carolina Lab SAF extract for one year. Consequently, we could not use the extract to track lab trends. Trends based on the Physician/Supplier Procedure Summary Files can be analyzed as long as the limitations of that dataset, as discussed earlier in this report, are recognized. In particular, the Physician/Supplier Procedure Summary File is organized by carrier, rather than by either specimen, beneficiary, or specimen location. Thus, it is difficult to compare results from the file to results shown earlier in this section that are based on the Lab SAF. Nonetheless, the results do provide useful information about trends over time and comparisons to national trends.

Table 3-47 shows volume and allowed and submitted charges for all Medicare Part B lab claims in North Carolina in 1992 to 1994. To highlight the trends over time, the data are not adjusted to account for interstate transport of claims. Although volume changed little

Table 3-46. Independent Market Shares for North Carolina and Bordering States Based on CLIA Provider File Test Volume

Although CLIA Provider File data include Medicare and non-Medicare volume, the resulting market shares are based on lab location, not specimen origin.

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Georgia				
SmithKline Beecham	20	28,009,439	68.1%	18.2%
Corning Clinical	2	5,025,845	12.2%	3.3%
Doctors Laboratory Inc.	13	3,959,928	9.6%	2.6%
Quintiles Laboratories Ltd	1	1,010,000	2.5%	0.7%
Carroll Medical Labs	5	605,367	1.5%	0.4%
Mullins Pathology & Cytology	1	541,045	1.3%	0.4%
Other Labs	97	1,958,656	4.8%	1.3%
Total Independent Labs		41,110,280		26.7%
Total All Labs		153,734,864		
North Carolina				
LabCorp	46	41,302,124	90.7%	28.0%
Compuchem Laboratories Inc.	1	2,000,000	4.4%	1.4%
Other Labs	45	2,247,282	4.9%	1.5%
Total Independent Labs		45,549,406		30.9%
Total All Labs		147,638,868		
South Carolina				
LabCorp	16	1,167,247	48.2	2.3
SmithKline Beecham	4	659,700	27.3	1.3
Greenville Medical Laboratory	1	176,000	7.3	0.4
Pee Dee Pathology Associates	1	64,850	2.7	0.1
Phoenix Laboratories	1	55,744	2.3	0.1
Cytology Lab of the Grand Strand	2	46,638	1.9	0.1
Reproductive Laboratory Associates	1	34,372	1.4	0.1
Cardiac Surgery Laboratories	1	34,000	1.4	0.1
Spartanburg Pathology Consultants	1	31,000	1.3	0.1
Carolina Pathology Associates	1	28,166	1.2	0.1
Total Independent Labs		2,420,160		4.8%
Total All Labs		50,194,615		

(continued)

Table 3-46. Independent Market Shares for North Carolina and Bordering States Based on CLIA Provider File Test Volume (continued)

Independent Lab Name	Number of Affiliated Labs	Number of Tests	Share of Independent Lab Tests	Share of All Lab Tests
Tennessee				
LabCorp	13	7,322,690	29.6%	6.6%
Baptist Regional Laboratories	5	5,205,260	21.1%	4.7%
Corning Clinical	2	4,151,000	16.8%	3.7%
SmithKline Beecham	5	2,865,216	11.6%	2.6%
Dialysis Clinic Inc.	3	2,449,189	9.9%	2.2%
Memphis Clinical Laboratory Inc.	1	476,700	1.9%	0.4%
National Psychopharmachology Lab	1	420,000	1.7%	0.4%
Other Labs	55	1,812,198	7.3%	1.6%
Total Independent Labs		24,702,253		22.2%
Total All Labs		111,157,059		
Virginia				
LabCorp	39	51,813,528	77.1%	33.5%
American Medical Labs Inc.	2	12,913,350	19.2%	8.4%
Medical Laboratories Of Virginia Inc.	4	727,788	1.1%	0.5%
Other Labs	58	1,734,699	2.6%	1.1%
Total Independent Labs		67,189,365		43.5%
Total All Labs		154,576,206		

Source: 1996 CLIA Provider File.

Table 3-47. Part B Lab Tests Excluding Hospital Outpatient Labs, North Carolina (Unadjusted)
Lab volume fell in North Carolina between 1992 and 1994, while allowed charges rose slightly in 1993 before falling in 1994.

	1994	1993	1992
Volume (millions)	18.8	19.2	19.8
Allowed ($ millions)	$202.4	$214.1	$206.5
Submitted ($ millions)	$474.5	$427.7	$380.8

Source: Physician/Supplier Procedure Summary File, 1992-1994.

nationwide between 1992 and 1994, volume fell by about 5 percent in North Carolina. North Carolina allowed charges followed national trends more closely, rising in 1993 before falling in 1994.

Of course, the unadjusted North Carolina data were dominated by claims for Roche labs throughout the country. To provide a more accurate measure of the volume and allowed and submitted charges for North Carolina, we reassigned these claims to the states where the labs were located. The adjustment significantly lowered the lab volume and allowed charges for North Carolina in 1992 and 1993 (Table 3-48).

Table 3-48. Part B Lab Tests Excluding Hospital Outpatient Labs, North Carolina (Adjusted)
Once Roche and SmithKline Beecham claims were appropriately reassigned to North Carolina, volume and allowed charges increase by about 50 percent.

	1994[a]	1993	1992
Volume (millions)	a	10.6	10.3
Allowed ($ millions)	a	$107.1	$100.1
Submitted ($ millions)	a	$222.2	$190.0

[a] Not meaningful because Roche claims in states other than North Carolina could not be identified in 1994.
Source: Physician/Supplier Procedure Summary File, 1992-1994.

Table 3-49 shows trends in the independent lab sectors' market shares of volume and charges in North Carolina based on unadjusted data. The unadjusted market share was higher than the national average, as expected, because all Roche independent lab claims nationwide were included. Because of the dominance of Roche claims, the trends for the independent lab sector were virtually identical to the overall trends for the state as a whole.

Table 3-49. Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, North Carolina (Unadjusted)
Trends were similar to overall state trends, due to Roche's dominance of the unadjusted data.

		1994	1993	1992
Volume	(millions)	15.1	15.7	16.1
	%	80.7%	81.8%	81.5%
Allowed	($ millions)	$179.1	$191.9	$185.1
	%	88.5%	89.6%	89.6%
Submitted	($ millions)	$424.2	$379.8	$333.0
	%	89.4%	88.8%	87.5%

Source: Physician/Supplier Procedure Summary File, 1992-1994.

Table 3-50 shows adjusted levels of independent lab volume and allowed charges that reassign SmithKline Beecham and Roche claims in 1992 and 1993; the adjustments for 1994 were not meaningful because Roche claims from out-of-state labs could not be identified. Even after the adjustment, independent labs had much higher shares of volume and allowed charges in North Carolina than they had nationwide. These shares increased slightly between 1992 and 1993.

Table 3-50. Part B Lab Tests, Specialty=Clinical Labs, Billing Separately, North Carolina (Adjusted)
Even after reassigning Roche claims appropriately, independent labs had high market share in Tennessee.

		1994[a]	1993	1992
Volume	(millions)	a	7.1	6.7
	%	a	66.9%	64.5%
Allowed	($ millions)	a	$84.8	$78.6
	%	a	79.2%	78.6%
Submitted	($ millions)	a	$174.4	$142.3
	%	a	78.5%	74.7%

[a] Not meaningful because Roche claims in states other than North Carolina could not be identified in 1994.
Source: Physician/Supplier Procedure Summary File, 1992-1994.

3.2.5 Part B Clinical Lab Tests in North Carolina Hospitals

Although lab tests performed by hospital outpatient labs are reimbursed under the Medicare Part B program, claims for the tests are actually processed by Medicare Part A fiscal intermediaries. Consequently, data on outpatient lab tests are not contained in the same data sets as data on tests performed by independent labs and POLs. Because the magnitude of outpatient testing has important implications for the demonstration project, we conducted in-depth analyses of outpatient lab claims data for North Carolina.

The data set for this analysis was the 1994 Outpatient 100% Standard Analytic File (Outpatient SAF). This file includes complete data for all outpatient claims processed by Medicare Part A fiscal intermediaries. We limited our analysis to outpatient claims filed by North Carolina facilities that included at least one of the lab procedure codes specified in Section 1.3. We further divided claims that met this criteria into "patient" and "nonpatient" lab claims as described in Section 3.1.6 for Tennessee.

Table 3-51 shows the number of lab procedures, lab allowed charges, and lab submitted charges for each type of outpatient lab claim. About 3.2 million Medicare Part B lab procedures were performed in outpatient labs in North Carolina in 1994. About 45 percent of these were performed on nonpatients. Nonpatient lab procedures accounted for about 46 percent of the $33.6 million in allowed charges paid outpatient labs in 1994. Outpatient lab allowed charges equaled about 28 percent of submitted lab charges.

Table 3-51. Outpatient Hospital Lab Tests in North Carolina

Nonpatient tests accounted for about 14 percent of outpatient test volume and 22 percent of outpatient allowed charges in North Carolina in 1994.

		Nonpatient	Patient	Total[a]
Volume	(millions)	1.5	1.8	3.2
	%	45.2%	54.8%	100.0%
Allowed	($ millions)	$15.4	$18.1	$33.6
	%	46.0%	54.0%	100.0%
Submitted	($ millions)	$49.3	$71.2	$120.5
	%	40.9%	59.1%	100.0%

[a] Numbers may not sum due to rounding.

Source: 1994 Outpatient SAF.

An important question related to outpatient testing is whether outpatient labs are a significant source of Medicare Part B testing. To address this question, we compared the overall North Carolina Part B market shares for the hospital outpatient, independent, and POL and other lab sectors. The market shares are based on allowed charges. Total Part B allowed charges were calculated by summing allowed charges for specimens drawn in North Carolina from the Lab SAF with allowed charges for North Carolina outpatient facilities from the Outpatient SAF. Because the Outpatient SAF does not include a referring physician variable, we could not precisely identify where specimens included in that data set were drawn.

Two market share calculations are shown in Table 3-52. The first includes all outpatient testing. Based on this estimate, outpatient labs accounted for about 34 percent of all Part B testing in North Carolina, with 16 percent coming from nonpatient testing and 18 percent coming from patient testing. Independent labs and POLs (and others) split the remaining 66 percent of the market, with about two-thirds going to independent labs.

The second market share calculation recognizes the similarity between nonpatient testing and tests performed in independent labs and POLs by excluding outpatient patient testing from the calculation. Nonpatient testing accounted for about 19 percent of the market defined in this manner, while the market shares for independent labs and POLs rose to 53 and 28 percent, respectively.

Table 3-52. North Carolina Part B Allowed Charges and Market Shares by Lab Sector
Outpatient labs accounted for about one-fifth of total Medicare Part B allowed charges in North Carolina.

	Outpatient Labs				
	Nonpatient	Patient	Independent Labs	POLs and Others	All Labs
Includes All Outpatient Lab Tests					
Allowed charges ($ million)	$15.4	$18.2	$43.4	$22.8	$99.7
Share (%)	15.5%	18.2%	43.5%	22.9%	100.0%
Excludes Outpatient Patient Testing					
Allowed charges ($ million)	$15.4	—	$43.4	$22.8	$81.6
Share (%)	18.9%	—	53.2%	27.9%	100.0%

[a] Numbers may not sum due to rounding.
Source: 1994 Lab SAF; 1994 Outpatient SAF.

4 Laboratory Operations and Processes

Chapter Outline
4.1 Laboratory Operations
4.2 Services to Rural Areas
4.3 Physician Choice of Lab
4.4 Physician's Medicare Business
4.5 Where Are Specimens Drawn?
4.6 Long-Distance Transport of Tests
4.7 Shared Labs

One of the objectives of our research was to develop a comprehensive understanding of laboratory operations that could be used to better design the clinical laboratory demonstration project. In this chapter, we discuss lab operations in general and address specific questions about the relationships between labs, physicians, and service areas. Many of our findings are based on our interviews with LTAC members and other experts in the industry.

In Section 4.1, we examine lab operations in clinical labs, hospital labs, and POLs. We compare and contrast operations in the three sectors, noting how lab processes and organization are affected by test volume, complexity, and clientele. The different sectors also have different concerns about regulatory and reimbursement issues, and we briefly discuss these views.

An important question for the demonstration project is whether competitive bidding can still deliver adequate lab coverage to rural areas. This issue is examined in Section 4.2, wherein we present views from the LTAC and review results of our county analysis for Tennessee.

In Section 4.3, we discuss how physicians choose labs. Price and service are the most important determinants of lab selection, according to LTAC members. In addition, MCOs are increasingly influencing a physician's choice of lab.

Physician choice of lab is closely related to a concern raised about past proposals for the competitive bidding demonstration project. This concern was that physicians would be reluctant to use more than one lab and would therefore resist demonstration incentives to use winning labs. To examine whether physicians routinely send Medicare tests to more than one lab provider, we analyzed Tennessee data from 1994. Results are discussed in Section 4.4.

In the remainder of the chapter, we examine how common it is for test specimens to be drawn in lab-operated drawing sites (Section 4.5), discuss the effects of long-distance transport of lab specimens (Section 4.6), and briefly consider the prevalence of shared labs (Section 4.7).

4.1 LABORATORY OPERATIONS

In interviews with LTAC members and other experts, much of the time was devoted to developing a full understanding of lab operations. Respondents were asked to discuss how their lab

- attracts clients,
- collects and transports specimens,
- performs tests,
- reports test results,
- collects reimbursement, and
- conducts quality control and quality assurance checks.

From these discussions, we developed descriptions of lab operations in the three major lab segments:

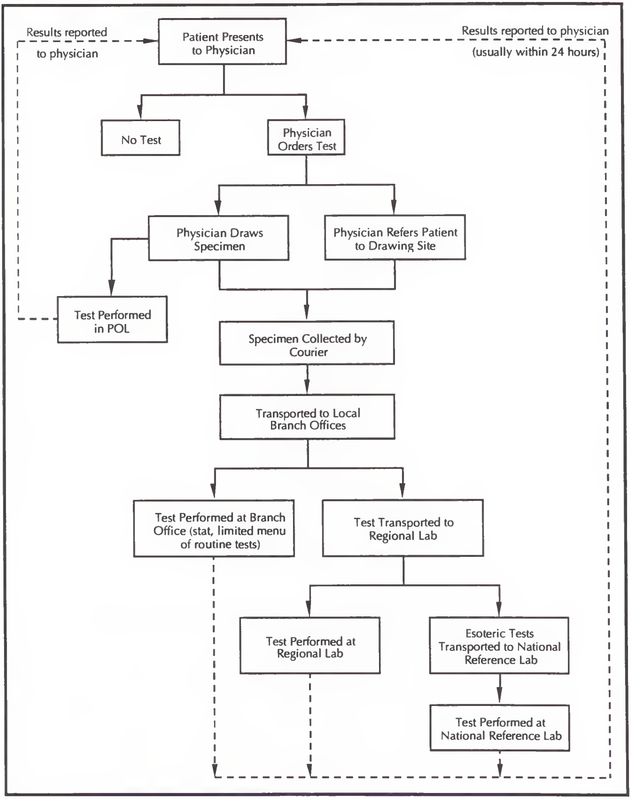
- independent labs,
- hospital labs, and
- POLs.

Our descriptions highlight some of the key differences between sectors.

Lab Operations in a Large Independent Clinical Laboratory

Figure 4-1 presents a flow chart showing how laboratory and test specimens are typically collected and tested by a large independent clinical laboratory. The testing process begins when a patient presents to a physician. (Independent labs generally do not take walk-in business; they only perform tests if they receive a signed request from a physician.) After deciding that a clinical laboratory test is needed, the physician either has a sample drawn in his or her

Figure 4-1. Collecting and Testing Specimens in a Large Independent Clinical Laboratory


Results reported to physician
Patient Presents to Physician
Results reported to physician (usually within 24 hours)
No Test
Physician Orders Test
Physician Draws Specimen
Physician Refers Patient to Drawing Site
Test Performed in POL
Specimen Collected by Courier
Transported to Local Branch Offices
Test Performed at Branch Office (stat, limited menu of routine tests)
Test Transported to Regional Lab
Test Performed at Regional Lab
Esoteric Tests Transported to National Reference Lab
Test Performed at National Reference Lab

office or refers the patient to a drawing site (also known as a patient service center) operated by the independent laboratory. Although the use of lab-operated drawing stations has increased in recent years, the vast majority of specimens tested by independent labs are still drawn within physician offices.

Large independent laboratories operate an extended courier system to collect specimens from physician offices and drawing stations.

Large independent laboratories operate an extended courier system to collect specimens from physician offices and drawing stations. Because most physicians prefer to have the day's pickups made at the end of normal business hours, the couriers make most of their pick-ups during the late afternoon and early evening. Couriers travel in cars and trucks and carry coolers and dry ice for transporting specimens that must be frozen. Couriers may also travel their routes in the morning, bringing supplies and hard-copy test results to physicians who do not receive test results electronically.

After couriers complete their routes, collecting anywhere from a few dozen to hundreds of specimens each, they return to local branch offices (known in some firms as sales ports). The branch offices collect specimens from a number of couriers and prepare the specimens for transport to a regional lab. Demographic information from the paper billing request form may be entered into the laboratory's computer-based accessioning system at this point. Large labs use bar codes to track specimens electronically. Some branch offices also perform a limited menu of tests. Such a menu might include stat tests on specimens whose physical characteristics require immediate testing or preclude extended handling and very routine tests that can be conducted in volume at the local level. The branch office also stockpiles supplies and provides front-end client service to physician accounts.

Depending on the distance, specimens are transported from the branch office to a regional lab either by truck or by private freight (e.g., Federal Express), commercial passenger, or lab-owned aircraft. Transport usually occurs during the evening, and trucks or planes may pick up specimens from a number of branch offices before returning to the regional lab.

Regional labs are designed to exploit the economies of scale associated with batch processing of tests, with some large labs testing 50,000 to 70,000 specimens per day.

Regional labs are designed to exploit the economies of scale associated with batch processing of tests, with some large labs testing 50,000 to 70,000 specimens per day. After arrival at a central processing room, specimens are sorted and delivered, sometimes by robotic delivery carts, to individual testing instruments within the lab. In some cases, specimens are subdivided into two or more "daughter tubes" for multiple testing. At one lab, for example, the average number of tests per specimen is 13. Throughput on individual instruments depends on the type of test and type of machine. Automated chemistry analyzers can test 225 to 240 specimens per hour, with each 0.5-milliliter specimen yielding up to 23 tests. Throughput rates of 110 per hour are common for CBC tests, a routine automated test.

Because specimens are picked up and delivered after physician offices close and results must be ready before physician offices open in the morning, most automated routine tests are performed at night. Not all tests can be conducted overnight, however. Microbiology tests typically require days or weeks to culture, and a traditional test for one form of tuberculosis takes 8 weeks. Labs generally also do not provide overnight results for "esoteric" (i.e., uncommon and/or complex) tests.

Large clinical labs generally operate one or more national reference (also known as "esoteric") labs that specialize in esoteric tests. National reference labs may receive specimens from branch offices, regional labs, hospitals, or other lab companies. Because of low volume and high complexity, esoteric tests require longer turnaround and more skilled personnel than routine tests. According to one estimate, esoteric tests represent about 10 percent of industry revenues (Rice, 1995).

After tests are performed by an independent lab, results are reported to physicians. As mentioned previously, independent labs provide next-morning or next-day reporting to physicians for routine automated tests. Physicians or practices ordering large volumes of tests receive results electronically through dedicated printers or computer link-ups. Physicians or practices with smaller test volumes may receive hard-copy test results from a courier making the rounds the following day.

Billing

Although specimen pickup and test performance are the most obvious components of independent laboratory operations, the billing process is—from a lab's perspective—an equally important component of the business. Because revenue per test, or even per specimen, is lower for lab tests than for other medical services, collecting billing information accurately and efficiently can have important effects on a lab's profits.

The billing process generally begins with the test requisition form. In addition to collecting data on patient demographics and tests ordered, a large section of this form is devoted to billing information. Billing is largely dependent on this information, and labs spend a fair amount of time correcting or collecting information that was supposed to be included on the requisition form. Independent labs have three general groups of clients that require different amounts of information for billing:

- commercial (usually physician) accounts,
- patients, and
- third parties (private insurers, Medicare, and Medicaid).

For commercial accounts, labs generally deliver a single monthly bill that contains the account name and an itemized list of patients and tests performed. Patient billing is somewhat more involved because itemized bills are mailed for every encounter and correct addresses are necessary. Third-party billing is generally done per claim or encounter and may require additional information requested by the third party. For example, privately insured claims may require the patient name, address (if the plan requires coinsurance), tests ordered, insurance group number, employer name, date of birth, and physician and patient identification numbers. Medicare claims require the patient's name, address, Medicare number and primary or secondary payer status, physician UPIN, and ICD-9 diagnostic codes to support the medical necessity of the tests ordered.

For the lab, a major complication in the billing process for private and third-party patients is the physician's lack of incentive to provide complete billing information.

For the lab, a major complication in the billing process for private and third-party patients is the physician's lack of incentive to provide complete billing information. The physician filling out a test requisition form is primarily interested in having the test ordered and performed and receiving results; supplying additional billing information provides no additional benefit to the physician, but it does take time. Yet the lab needs the billing information to get paid, and, once it accepts a specimen, it is obligated to provide test results to the requesting physician, even if billing information is incomplete. When billing information is incomplete, the branch office contacts the physician's office to attempt to collect the missing information.

Depending on the payer, labs submit claims electronically (the preferred method used for the majority of claims) or in hard-copy form. Remittance is generally a more manual process than submission, although some Medicare carriers have moved to electronic remittance. If the claim is denied at this stage due to incomplete billing information, the lab may gather additional information and resubmit.

Medical Necessity

Independent lab managers who were interviewed were especially concerned about the impact of Medicare medical necessity requirements on billing and reimbursement.

Independent lab managers who were interviewed were especially concerned about the impact of Medicare medical necessity requirements on billing and reimbursement. Medicare carriers currently establish local medical review policies that set medical necessity documentation requirements for reimbursement on selected clinical tests. The policies generally allow reimbursement for a particular test only if ICD-9 codes deemed appropriate for the test are included on the test requisition form. These policies complicate the billing process for independent labs in three ways:

1. Physicians do not always provide ICD-9 code documentation for the tests.
2. Physicians sometimes order tests that do not meet Medicare standards of "reasonable and necessary."
3. Two large independent labs with multistate lab operations (LabCorp and SmithKline Beecham) each currently submit most of their claims centrally to a single Medicare carrier, which sets its own standards for medical necessity. In some cases, the standards may differ from the standards set by the carrier in the state where either the specimen was collected or the performing lab was located. This has reportedly caused some confusion among physicians about which standard is applicable. Recently, LabCorp announced that it is dropping its single-carrier arrangement with Medicare, reportedly because of differing carrier standards on medical necessity.

To overcome these complications and ensure payment, labs have adopted a number of strategies. First, they have attempted to educate physicians on medical necessity requirements and have continued their efforts to collect needed billing information that is not included when the test requisition form is initially submitted. Second, to ensure payment for tests that do not meet Medicare standards of "reasonable and necessary," at least one lab includes an "Advance Beneficiary Notice" on the back of its test requisition form. The form briefly explains that Medicare will only pay for tests that it determines to be "reasonable and necessary," indicates which tests the physician believes Medicare is likely to deny payment for, and asks patients to sign an agreement to be personally and fully responsible for payment for the indicated tests if Medicare denies payment. The success of this strategy depends on the physician's willingness to take the time to administer and explain the form, and on a patient's understanding and signature of the form. Finally, the American Clinical Laboratory Association has asked HCFA to establish standardized requisition forms and uniform medical necessity requirements for carriers.

Size and Scope of Independent Labs

Table 4-1 provides an indication of the size and scope of a large independent lab's operations. It provides information on the lab operations of Roche Biomedical Labs and National Health Labs just prior to the companies' merger to form LabCorp.

Table 4-1. An Example of Size and Scope of Independent Labs
Independent lab companies operate extensive networks of drawing stations, branch offices, and labs.

	Roche	National Health
Drawing Stations	440	
Branch Offices	160	950[a]
Stat Laboratories	100	
Regional Laboratories	17	23
National Reference Lab	1	1
Patients/Specimens Per Day	80,000 patients	152,000 specimens

[a] Includes drawing stations, branch offices, and stat laboratories.
Source: Rice, 1995.

Besides the large national labs, the independent lab sector also includes regional and specialty labs. Like national labs, regional labs maintain extensive courier systems in the state or region where they operate. Most of their revenue comes from routine tests; they are less likely than national labs to perform an extensive array of esoteric tests.

The independent lab sector also includes specialty labs that focus on specific types of tests, such as microbiology, endocrinology, and cytogenetics. These labs have been able to survive by filling niches in the market, establishing reputations for quality, and/or affiliating with related entities, such as renal dialysis centers.

Hospital Labs

Hospital labs treat four major categories of patients:

- Inpatients.
- Outpatients who receive the same type of acute care as inpatients but who are in the hospital less than 24 hours. This category includes emergency room and other outpatients who are acutely ill.
- "True" outpatients who come to the hospital to receive scheduled care on an outpatient basis.
- "Nonpatients" who never enter the hospital. The hospital lab performs tests on the nonpatient's specimen, but the nonpatient never actually visits the hospital.

The distribution of tests across categories can vary widely between hospitals, depending on how aggressively the hospital seeks nonpatient (also known as outreach) referrals from physicians.

The distribution of tests across categories can vary widely between hospitals, depending on how aggressively the hospital seeks nonpatient (also known as outreach) referrals from physicians. Some hospital labs are very committed to outreach testing and operate large courier networks, while others do minor amounts of outreach testing or limit their outreach to physician offices located within the medical center campus. At one large hospital, which only picks up tests from physician offices located on the medical center campus, about 75 percent of the tests performed by the lab are on inpatients or outpatients who receive the same type of acute care as inpatients (the latter category accounts for about 25 percent of the total number). Fifteen to 20 percent of the lab's tests are on true outpatients, and 5 to 10 percent are on nonpatients.

Because of their emphasis on inpatient and emergency room patients, test processing in hospital labs differs in a fundamental way from processing in independent clinical labs: tests must frequently be performed immediately (stat) to diagnose acutely ill patients. In addition, because hospital-based physicians are accustomed to getting quick test results, they may order tests on a stat basis even when such quick turnaround is not required by medical necessity. The frequent use of stat testing in hospital labs makes batch processing of large volumes of tests difficult. Consequently, the actual cost of test performance may be higher in hospital labs than in independent labs. On the other hand, hospitals generally have lower specimen collection and transport costs than independent labs (unless the hospital aggressively pursues outreach activities), and the hospital's central information system may have lower test reporting and billing costs than independent labs.

Test throughput in hospitals tends to follow the overall flow of hospital activities. As a result, more tests are performed in the daytime (as opposed to the nightly rush in independent labs) and fewer tests are performed over the weekend.

Hospital labs tend to perform more tests than physician offices, but fewer than large independent labs. Hospital labs may perform a few time-dependent tests that an independent lab cannot perform, whereas independent labs, with their higher overall volume, can provide esoteric tests that hospital labs do not offer.

Health systems that operate one or more hospitals may operate an independent lab as well as hospital labs. Although systems are able to move some of the hospitals' high-volume tests into the independent lab, where they can presumably be done more efficiently, this shift is limited by hospital physicians' insistence on quick turnaround. As a result, most of the tests performed in systems' independent labs are referred from physician offices.

Some hospital labs are expanding their outreach in other ways. For example, a hospital in Tennessee has purchased 20 physician office labs in recent years. The hospital also operates a reference lab.

Respondents from hospital labs were generally much less concerned about Medicare medical necessity requirements than independent labs. CLIA 88 rules also are not a big concern for hospital labs.

Physician Office Labs

About half of all physicians perform lab tests in their own physician office labs (POLs) (Born and Thran, 1996). POLs vary dramatically in the types of procedures performed, with many POLs performing just a few simple procedures and a few POLs performing a menu of tests that rivals the menu of moderately sized independent labs. The probability that a physician practice operates a POL increases with the size of the practice; total test volume and the menu of procedures performed also rises with practice size. Specialties that are especially likely to operate POLs include primary care, internal medicine, dermatology, obstetrics, and pediatrics. Rural physicians are also more likely to operate POLs (Born and Thran, 1996).

As Figure 4-1 suggests, the testing process in POLs involves fewer steps than testing by independent labs because POLs do not require courier collection and transport of specimens. Physicians that operate POLs argue that avoiding these steps improves patient convenience and timeliness of results.

POLs are especially concerned about the regulatory impact of CLIA 88.

POLs are especially concerned about the regulatory impact of the Clinical Laboratory Improvement Amendments of 1988 (CLIA 88). CLIA 88 extended federal laboratory regulation to virtually all clinical laboratories in the country. Previously, most POLs were not federally regulated. Many POLs argue that the CLIA 88 regulations are burdensome and unnecessary.

To back this argument, one of the LTAC members forwarded the results of a 1995 survey of POLs commissioned by the American Medical Association (AMA) and other trade associations to evaluate the effects of CLIA 88 on POLs (Needels, Strouse, and Hall, 1995). For this survey, 1,141 POLs that had responded to an earlier (1991) pre-CLIA 88 survey were asked whether they had dropped some on-site testing primarily because of CLIA 88. They were also asked how burdensome they found the CLIA 88 regulations.

Over half (54 percent) of the respondents reported dropping some on-site tests because of CLIA 88, and 9 percent reported dropping all on-site testing. Nearly three-quarters of respondents considered the CLIA 88 administrative requirements very or somewhat burdensome.

Although the survey probably conveys POL attitudes toward CLIA 88 accurately, the survey is not without limitations. Although a number of factors in the laboratory environment changed (reimbursement levels fell, managed care penetration increased, etc.) between the 1991 and 1995 surveys, only CLIA 88 was specifically listed in the latter survey as a reason for reducing or dropping on-site testing (7 percent of POLs reported dropping some or all tests "primarily for reasons other than CLIA 88"). POLs may have been more likely to cite CLIA 88 because other factors were not specifically mentioned. POLs were not asked whether they increased any lab tests, despite CLIA 88. The survey also did not attempt to determine the impact of CLIA 88 on test quality.

Although the POL survey has its limitations, it is supported by data from AMA Socioeconomic Monitoring System surveys, which show that the percentage of physicians with in-office laboratory testing capabilities increased from 45.2 percent in 1989 to 53.8 percent in 1993, but decreased significantly to 48.9 percent in 1995. The decline coincided with implementation of CLIA. In 1995, 31.5 percent of physicians reported they had dropped some tests during the previous year, compared to 23.8 percent who reported dropping tests in 1993 (Born and Thran, 1996).

4.2 SERVICES TO RURAL AREAS

Some, but not all, LTAC members and other experts we interviewed suggested that large independent labs are growing more reluctant to serve rural areas. Special problems with serving rural areas include

- long distances between providers,
- relatively small test volumes per pickup and courier route, and
- bad driving conditions during northern winters.

In Arizona, a regional lab manager reported that the Big Three (SmithKline Beecham, LabCorp, and Corning) national lab companies are reducing service to rural areas. In Wisconsin, the Big Three have larger market shares in urban areas than they have in rural areas. Tennessee respondents expressed mixed views about Big Three coverage in rural areas in their state.

As described in Chapter 3, we used combined Tennessee data from 1994 Lab and Outpatient SAFs to analyze lab service to rural counties in Tennessee. For each county, we calculated the number of independent labs, POLs, and hospital labs serving providers who referred tests from the county. To briefly repeat the results of this analysis, we found the following:

- The number of labs serving and independent lab shares varied widely among counties. Not surprisingly, the number of labs serving each county were closely related to allowed charges. Rural counties generally had low allowed charges, and consequently were served by fewer labs of all types than urban counties. However, as allowed charges increased, rural counties were served by increasing numbers of all types of labs.
- The relationship between allowed charges and independent lab share was less clear. Eighteen counties had independent lab market shares of less than 15 percent; 17 of these counties were rural. On the other hand, 5 of the 7 counties where independent labs had more than 50 percent market share were rural.
- Hospitals had large market shares in many rural counties. In part, this may reflect the importance of hospitals as the focus of health care services in many small rural counties. In addition, many rural beneficiaries may travel to urban areas to visit physicians.

The low numbers of labs serving counties with low levels of allowed charges has important implications for the design of the demonstration project. The lab design must address how to treat counties that are currently being served by few labs.

The low numbers of labs—of all types—serving counties with low levels of allowed charges has important implications for the design of the demonstration project. Eight counties were served by zero or one independent lab, and eight counties were served by zero or one POL. Most of these counties had very low allowed charges. The lab design must address how to treat counties that are currently being served by few labs.

4.3 PHYSICIAN CHOICE OF LAB

According to many LTAC members, physicians choose labs on the basis of price and service, with the primary motivation varying between physicians. According to one member, most independent labs have the same requirements for quality, but there may be important differences in service aspects. Small labs can really shine in this area, he noted, by establishing a strong rapport between the lab and the physician office.

Managed care organizations (MCOs) that strongly encourage or require participating physicians to use a designated lab are increasingly influencing a physician's choice of lab, according to respondents.

4.4 PHYSICIAN'S MEDICARE BUSINESS

To examine whether physicians routinely send Medicare lab tests to more than one provider, we analyzed the Tennessee extract of the 1994 Lab SAF (thus, tests performed by hospitals were excluded). We calculated the number of labs used by each referring provider in Tennessee. We assumed that the referring provider used a lab if he or she referred specimens to the lab that resulted in allowed charges of $100 or more. Specimen drawing procedures were excluded from this calculation. Table 4-2 includes tests referred by the provider to his or her own POL.

Results of the analysis are shown in Table 4-2. Nearly three-fourths of Tennessee providers used only one lab in 1994. However, physicians using only one lab accounted for only about 25 percent of allowed charges in the state. Providers who referred larger numbers of tests were more likely to use multiple labs.

Table 4-2. Number of Labs Used by Referring Providers in Tennessee
Although most Tennessee providers used only one lab, providers who used multiple labs accounted for about 88 percent of allowed charges.

Number of Labs Used	Number of Referring Providers	Percent of Providers	Percent of Allowed Charges
1	8,697	75.9	25.2
2	1,103	9.6	10.1
3	707	6.2	11.9
4	437	3.8	14.6
5	250	2.2	14.7
6	143	1.2	11.1
7 or more	119	1.0	12.4

Source: 1994 Lab SAF.

Our analysis was based on a single year's data and therefore cannot provide trend information on the number of labs a typical physician uses, so we asked LTAC members about such trends. LTAC members agreed that physicians are increasingly using more than one lab. Physicians in the Northeast commonly use from one to three labs, according to a lab manager there ("They use a large lab for their private patients, and their Medicare patients come to us," he added). In Arizona, where managed care penetration rates are especially high, the average physician may have four or five lab pickup boxes outside the office. Use of multiple labs was also cited as a reason why lab hopes of profitable pull-through from managed care contracts have not materialized.

Because of the growing use of multiple labs, one of the main concerns raised about past proposals for the lab demonstration—physicians' reluctance to use more than one lab—may be less relevant now.

Because of the growing use of multiple labs, one of the main concerns raised about past proposals for the lab demonstration—physicians' reluctance to use more than one lab—may be less relevant now.

4.5 WHERE ARE SPECIMENS DRAWN?

The testing process begins when a patient presents to a physician. (Independent labs generally do not take walk-in business; they only perform tests if they receive a signed request from a physician.) After deciding that a clinical laboratory test is needed, the physician either has a sample drawn in his or her office or refers the patient to a drawing site (also known as a patient service center) operated by the independent laboratory. Although the use of lab-operated drawing stations has increased in recent years, the vast majority of specimens tested by independent labs are still drawn within physician offices.

The vast majority of specimens tested by independent labs are still drawn within physician offices.

One indication of the dominance of physician office drawing sites is the relative distribution of G0001—drawing blood for specimen—procedures between independent labs, hospitals, and physicians. In Tennessee in 1994, physicians accounted for 57.9 percent of allowed charges for G0001, compared to 29.2 percent for hospitals, and 12.8 percent for independent labs.

4.6 LONG-DISTANCE TRANSPORT OF TESTS

Members indicated that long-distance transport of certain lab tests does require careful quality assurance procedures. For example, specimens for acid phosphatase and creatine must be frozen quickly, and specimens for vitamin B-12 and folate tests must be stabilized and refrigerated within 8 hours. For most lab tests, however, long-distance transport is possible, as long as correct procedures are followed. Labs must have written policies on transport; reputable labs follow these policies carefully.

Labs must have written policies on transport; reputable labs follow these policies carefully.

The ARUP Laboratories, Inc., a national reference lab located in Salt Lake City, Utah, provides an example of how large independent labs can use long-distance transport to serve clients across a wide geographic area. ARUP serves accounts in 48 of 50 states, with specimens transported daily by commercial airline (ARUP reportedly is Delta Airline's largest commercial cargo client at the airline's Salt Lake City hub).

4.7 SHARED LABS

Shared labs are jointly owned and physician-operated labs. When a physician who shares in a lab orders a test, the physician bills for the lab service, not the lab. To examine the prevalence of shared labs, we analyzed the CLIA Provider File, which has an indicator variable for shared labs. Currently, only 568 out of 178,189 active CLIA-certified labs identify themselves as shared labs. Only 14 out of 3,692 CLIA-certified labs in Tennessee are listed as shared labs. HCFA Health Standards and Quality Bureau staff indicate that the shared lab variable is not yet reported in a valid and consistent manner by labs. Consequently, we did not further pursue analysis of shared labs.

5

Recent Experience with Competitive Bidding for Lab Services

Chapter Outline
5.1 Managed Care Organizations
5.2 Government Organizations
5.3 RFPs
5.4 Quality

Competitive bidding has become increasingly common in the clinical laboratory industry in recent years. Both private organizations and government agencies are using forms of competitive bidding to select lab providers and set lab fees. In this chapter, we examine recent experience with competitive bidding for lab services.

In Section 5.1, we begin by examining the use of competitive bidding by managed care organizations (MCOs). To provide detail on how MCOs use the bidding process to select labs and set fees, we focus on two recent large procurements by MCOs. After in-depth descriptions of these specific procurements, we discuss MCO contracting in general.

In Section 5.2, we examine the use of competitive bidding for lab services by government agencies. Government agencies use competitive bidding for lab services more frequently than many realize. We found 27 government solicitations and 10 contract awards announced in the *Commerce Business Daily* between March 1 and August 31, 1996. We discuss characteristics of these solicitations, noting that contract services vary widely in scope, size, complexity, and service coverage.

In Section 5.3, we discuss various aspects of the request-for-proposal (RFP) process. One of our LTAC members has written an article on how to write an effective RFP, and the article's insights should provide assistance in the development of an RFP for the bidding demonstration. We also review several RFPs that were provided by an LTAC member or obtained from government agencies.

Finally, we conclude the chapter with Section 5.4, which presents comments by LTAC members on quality control and quality assurance. One of the key issues in designing the demonstration project is how to ensure that the demonstration does not adversely affect quality.

5.1 MANAGED CARE ORGANIZATIONS

MCOs are increasingly contracting with individual laboratory companies for laboratory services. In some cases, MCOs negotiate directly with a single lab provider. In other cases, the MCOs set up a more formal bidding competition by issuing RFPs and invitations to bid to selected providers.

In this section, we provide detailed descriptions of the experiences of two organizations that have used competitive bidding to select and reimburse labs. We also summarize the results of these and other buyers' experiences.

Tennessee Managed Care Network

The Tennessee Managed Care Network used competitive bidding to contract for lab services for the Network's enrollees in TennCare.

One member of the LTAC is employed by a managed care consulting company that helps MCOs negotiate contracts for ancillary care. In late 1993, the company helped the Tennessee Managed Care Network negotiate four contracts to provide ancillary services to the Network's enrollees in TennCare, Tennessee's new managed care program for Medicaid beneficiaries. The four contracts—all capitated—covered

- laboratory services,
- pharmacy services,
- psychiatry services, and
- vision care.

The laboratory contract is especially relevant for this study and is described in more detail below.

Type of Contract

Labs bid for a single-source, capitated contract.

Test Coverage

The MCO sought a comprehensive contract covering all lab services; ultimately, just one lab procedure was excluded from the contract. Stat tests were covered under a two-tiered pricing arrangement, and, in conjunction with the contract, participating MCO physicians were allowed to perform only CLIA-waived tests.

Bidders

Contract requirements and invitations to bid were sent to four national companies (SmithKline Beecham, Roche Biomedical Labs, National Health Labs, and Allied Clinical Labs). Labs bidding together had to be part of the same corporate entity (i.e., no coalitions—the LTAC member believes that this condition would be amended if the bidding were repeated currently). Bidders were required to provide services in all 95 Tennessee counties. By the time bidding began, two labs (National Health and Allied Clinical Labs) had merged, leaving three bidders in the competition.

Nonprice Requirements

In addition to geographic coverage, contract requirements included the provision of

- appropriate lab certification and proficiency testing credentials;
- necessary data support systems;
- test utilization data for monitoring;
- draw sites in cities with more than 100,000 population;
- all tubes, supplies, and forms for submitting specimens; and
- training for physician staff on specimen preparation.

Bidding Process and Results

The MCO's lab selection committee conducted bidding/negotiations with labs during an intensive 5.5 hour conference call session on December 19, 1993. The committee negotiated individually with each lab that had agreed to the contract requirements. The bidding competition was close, with the final offers between two of the labs nearly identical, and the selection decision was ultimately made by the MCO's medical director on the basis of past reputation and quality. The contract was awarded to SmithKline Beecham.

Contract Savings

Based on previous Medicaid data, the LTAC member estimated that the MCO paid about 60 percent less than it would have paid in the absence of competitive bidding.

Based on previous Medicaid data, the LTAC member estimated that the MCO paid about 60 percent less than it would have paid in the absence of competitive bidding.

Quality Monitoring

As part of the contract, the winning lab must

- submit results of quarterly in-house and external proficiency testing,
- report any deficiencies,
- allow annual on-site inspections,
- provide reports of any actions filed by regulatory agencies, and
- provide results of 10 percent re-reads.

Performance

According to the LTAC member directly involved with the lab negotiation, the MCO is quite satisfied with contract performance. Although the MCO experienced the same growing pains experienced by other TennCare providers, those pains have not been associated with the capitated ancillary contracts. Physicians have complained very little about turnaround. After an initial first-month contention about the prohibition on POL performance of nonwaived tests, that issue has faded. In 2.25 years, there has been one complaint about test quality. That complaint was valid, and the problem was corrected through the lab's in-house quality assurance program.

CIGNA's Bidding Experience

CIGNA used competitive bidding to select a single laboratory to provide reference laboratory service for its health plans.

In 1995, CIGNA HealthCare conducted a bidding competition to select a single laboratory to provide reference laboratory services for its numerous health plans nationwide. Prior to the competition, CIGNA had signed nonexclusive nationwide contracts with three large independent laboratories. Individual CIGNA plans could use any of these labs; they could also negotiate their own lab contracts with these or other providers. After a financial review indicated that a number of plans were going outside the national contract and that plans were paying a wide range of rates, CIGNA decided to adopt a single-source contract for lab services in order to:

- Pay uniform rates across health plans.
- Pay lower lab fees by allowing the winning lab to fully exploit economies of scale.
- Receive uniform information on lab utilization across plans. Previously, some plans received good information, others received little or no information, and the information that was received was not comparable across plans.

To write an RFP, CIGNA assembled an RFP team with representatives from its clinical labs and members from its medical management, claims, eligibility, financial, purchasing, provider relations, legal, and contracting departments. The representatives, who also participated in the evaluation of bids, considered all aspects of the RFP but focused especially on their own areas of expertise. The RFP package consisted of both a hard copy and a computer diskette on which respondents could record their bids and respond to RFP questions. Information on plan membership, location, and demographics was provided to bidders; no information on past utilization was included because CIGNA itself did not have information that was comparable across plans.

Participants

Originally, the RFP was mailed to SmithKline Beecham, Corning/MetPath, National Health Laboratories (NHL), Roche Biomedical Laboratories, and Associated Regional and University Pathologists. NHL and Roche subsequently merged to form Laboratory Corporation of America (LabCorp). Only SmithKline, Corning/MetPath, and LabCorp submitted bids.

Bidding

Respondents were asked to answer questions on a variety of issues including quality, service, and coverage. In addition, they were asked to provide rates for both HMO and PPO plans. Respondents were required to bid capitated rates for HMO plans and a fee schedule, by test, for PPO plans. In the latter case, fees for individual tests were aggregated into a single composite bid using expected utilization.

Quality Assurance and Performance Standards

To ensure that the winning lab maintained adequate quality standards, the RFP included an extensive list of quality-related questions. The resulting contract also contained a number of performance standards that the winner must meet.

Stat Testing

The RFP specified that a fixed percentage of tests performed on a stat basis would be covered by the capitation rate. As part of their bid, labs indicated how quickly they could provide stat results.

Physician Office Lab (POL) Testing

During the negotiation process, CIGNA identified a relatively limited number of tests that physicians may perform in POLs.

Geographic Coverage

CIGNA provided labs with a list of all ZIP codes—rural and urban—where plan members resided. As with other health plans, membership in CIGNA plans is concentrated in urban areas. Bidders had to agree to provide service to all of these ZIP codes. Bidders were allowed to subcontract services in areas where they had insufficient current capacity to serve the market.

Evaluation

Prior to distributing the RFP, the RFP team identified the most important criteria for evaluation and established relative weights for each criteria. Bidders were not told the relative weights of the evaluation criteria. However, from the questions, the bidders may have inferred what the evaluation criteria were.

Best and Final Offer

After receiving the initial bids, CIGNA first negotiated with the bidders on nonrate issues. CIGNA then told the labs if their rates were out-of-line when compared to CIGNA's existing rates for its health plans. Each of the labs then made its final rate offer during a formal presentation before the RFP committee. Rates fell substantially between the initial bid and the final offer, especially on the capitation rates.

Selection

Ultimately, CIGNA chose SmithKline Beecham to provide services to all of its health plans, with the exception of those CIGNA locations that had existing lab facilities (Arizona and New Mexico). The winning capitation rates and fee schedule are not publicly available. CIGNA reports that, as a result of this agreement, it has gained access to the experience of the selected lab and is receiving detailed management information to be used in utilization management and disease management initiatives.

Timing

The RFP committee began to develop its RFP in January 1995; labs responded with their initial offers by April 1995. After numerous negotiation rounds, the contract was ultimately awarded in September 1995.

Implementation

The contract took effect on January 1, 1996, and site-by-site implementation has been taking place since that date. Despite a few complaints from local plans, CIGNA officials report less resistance to implementation of the single-source contract than they had expected. They attribute this result to the effort that local CIGNA health plans and the lab company have devoted to implementation planning.

General Remarks

Several general conclusions arise from these and other examples of competitive bidding for lab services:

- Buyers believe they received good prices through competitive bidding. They are generally reluctant to reveal what those prices are.
- Buyers also believe they received good quality and good service.
- Buyers generally seek single-source contracts. An exception is Aetna, which uses nonexclusive contracts with each of the Big Three lab companies (*Laboratory Industry Report*, 1995).
- Managed care organizations usually seek capitated contracts when they are single source, while VA and other hospitals use competitive bidding to set prices for individual tests on a fee-for-service basis.

- Buyers believe they have achieved substantial savings even with only three or four labs bidding for their contracts. Both CIGNA and the Tennessee Managed Care Network were pleased with the prices they received from competitive bidding between three or four large labs.

5.2 GOVERNMENT ORGANIZATIONS

Solicitations for government contracts and government contract awards are usually announced in the *Commerce Business Daily (CBD).* Solicitation announcements typically include a brief one-page description of contract requirements and invite interested suppliers to request an RFP that will be issued within about 2 weeks. Contract award announcements are much shorter, providing concise information on the procurement title, date of award, procuring agency, winner, and contract amount.

To determine whether other government agencies use competitive bidding for lab services, we examined electronic versions of the *CBD* for the period between March 1 and August 31, 1996.

Competitive procurement of laboratory services by government agencies is not unprecedented. We found 27 solicitation announcements for the 6-month period.

Competitive procurement of laboratory services by government agencies is not unprecedented. We found 27 solicitation announcements for the 6-month period (Table 5-1). Although none of the procurements was exactly comparable to that contemplated under the Medicare demonstration, this past experience may offer useful lessons for the demonstration project. The procurements and awards varied widely in the following ways:

- Procuring agencies included VA medical centers, Army hospitals, and other military installations; the U.S. Nuclear Regulatory Commission; the Centers for Disease Control and Prevention; the Federal Bureau of Prisons; the Alaska Area Native Health Service; the U.S. Postal Service; the National Institutes of Health; and the U.S. Department of Justice.
- Complexity ranged from routine urinalysis tests to general reference tests to very rare individual esoteric tests.
- Volume ranged from approximately 300 tests per year at VA Medical Centers in Tomah, WI, and Iron Mountain, MI, (5/16/96) to over 140,000 per year for the Federal Bureau of Prisons (5/31/96).
- Pickup requirements ranged from service to a single facility to service at a wide array of facilities.
- Time limit on results ranged from 4 hours to 24 hours to no stated maximum allowed time.

Table 5-1. Solicitation Announcements Listed in the *Commerce Business Daily*, March 1 through August 31, 1996
We identified 27 solicitation announcements for laboratory services during the period.

Title	Date	Procurer	Description	Length of Contract
Laboratory Testing Services with the Portland Oregon Area	3/5/96	VA Medical Center Portland, OR	Local reference lab to provide viral culture support. Specimen to be cultured within 6 hours of pick up from VA, Monday through Friday, minimum three times per day. Courier services, all necessary labor, equipment, and supplies included.	1 year with option to extend up to 4 additional years
Clinical Laboratory Testing Services	3/7/96	Commander (fcp-3), Maintenance and Logistics Command Pacific, Coast Guard Alameda, CA	Provide reference lab medical testing services and clinical pathology consultation services for twelve U.S. Coast Guard clinics. Services include pickup and transport of specimens, pre-analytic processing, analysis, and result interpretation.	One year plus four 1-year renewal options
Urine Specimen Collections	4/17/96	U.S. Nuclear Regulatory Commission Washington DC	Provide for collection of urinalysis testing of NRC employees at NRC Headquarters and at four regional offices and approximately 85 remote sites throughout the U.S. Provide all labor, materials, and equipment necessary to collect and transport specimens.	1 year plus two 1-year renewal options
Laboratory Testing Services	4/29/96	Centers for Disease Control and Prevention Atlanta, GA	Provide laboratory testing of approximately 2,000 serum specimens by micro-neutralization for rubella antibodies.	4 months
Reference Laboratory Testing Services	5/6/96	Department of Veteran Affairs Medical Center Pittsburgh, PA	Reference Laboratory Testing Services including regularly scheduled pickup and transport of specimens, pre-analytic processing analysis, reporting, and providing of necessary telecommunications equipment, and consultation.	Unknown
Laboratory Testing	5/13/96	VA Medical Center Lake City, FL	Correction from 4/8/96. Provide laboratory testing, courier service, and detailed reports	1 year plus four 1-year renewal options
Laboratory Testing	5/14/96	Fleet and Industrial Supply Center Bremerton, WA	Laboratory Testing in support of the U.S. Naval Hospital, Guam. Tests will be ordered via the issuance of individual delivery orders	1 year

(continued)

Table 5-1. Solicitation Announcements Listed in the *Commerce Business Daily*, March 1 through August 31, 1996 (continued)

Title	Date	Procurer	Description	Length of Contract
Commercial Lab Testing	5/16/96	VA Medical Center Milwaukee, WI	Provide Laboratory Testing Services to the Lab Service Department at VAMC's Tomah, WI, and Iron Mountain, MI, VA Medical Centers. Services include pickup and transport of specimens, pre-analytic processing, analysis reporting of analytic results, and consultation regarding selection, collection, transportation, and result interpretation. Approximately 300 tests per year.	1 year with two 1-year renewal options
Inmate Urinalysis Testing	5/24/96	Federal Bureau of Prisons Washington, DC	Providing Inmate Urinalysis Testing for narcotic and other substances. Estimated quantities for base year: 130,000 primary tests (EMIT), 6,500 special tests, 45 steroid tests, 26 LSD and/or Fentanyl tests, 30 other methodology.	1 year plus four 1-year options
Cost per Test, Glycosylated Hemoglobin Assay	5/29/96	VA Northern California Health Care System Pleasant Hill, CA	Perform Glycosylated hemoglobin (HPLC method) assays/reagents using brand name: Bio-Rad Variant Analyzer, Model No. 270-0001" or equal. Process unattended approximately 100 samples in an 8-hour interval, 850 samples a month.	Base period plus two 1-year options
Testing of Viral Markers and Other Serological Blood Donor Tests	5/30/96	Walter Reed Army Medical Center Washington, DC	Test specimens for blood donor units collected by the WRAMC Blood Program. Approximately 750 units of blood a month, each needing 10 tests.	1 year plus four 1-year renewal options
Inmate Urinalysis Testing	5/31/96	Federal Bureau of Prisons Washington, DC	Providing Inmate Urinalysis Testing. Estimated quantities of tests for base year: 130,000 primary tests, 6,500 special tests, 45 steroid tests, 26 LSD and/or Fentanyl tests, and 30 other methodologies.	1 year plus four 1-year options
Reference Laboratory Testing Services	6/3/96	Department of Veteran Affairs Medical Center Nashville, TN	Perform reference laboratory testing services including pickup and transport of specimens to its laboratory; pre-analytic processing; report of analytic results, and consultation regarding selection, collecting, transportation, and result interpretation.	1 year plus two 1-year options
Provide Laboratory Testing Services	6/4/96	Department of Veteran Affairs Medical Center Pittsburgh, PA	Provide reference laboratory testing services, including all necessary supplies, equipment, labor, service, and transportation for tests on an "as-need-basis," with daily pick-ups and as-needed pickups as specified. Over 3,000 tests a year.	1 year plus two 1-year options

(continued)

Table 5-1. Solicitation Announcements Listed in the *Commerce Business Daily*, March 1 through August 31, 1996 (continued)

Title	Date	Procurer	Description	Length of Contract
Clinical Reference Laboratory & Cytology Services	6/20/96	Alaska Area Native Health Service Anchorage, AK	Professional clinical laboratory testing services including GYN and NON-GYN Cytology	1 year plus two 1-year renewal options
Laboratory Services for Drug Screening	7/2/96	U.S. Postal Service Washington, DC	Laboratory services for drug screening of applicants and employees. Tests at 2,000 sites nationwide and test approximately 230,000 individuals annually.	1 year plus three 1-year options
Perform Assays for the D4 Dopamine Receptor	7/8/96	National Institute of Health Rockville, MD	Provide data on the specific DRD4 genotypes. Perform 1,000 assays for the D4 dopamine receptor (DRD4) gene on DNA from participants in the Baltimore Longitudinal Study.	1 year plus three renew-option periods
Reference Laboratory Services	7/8/96	Southwest Contracting Center El Paso, TX	Reference laboratory services for various Department of Pathology lab tests.	1 year plus three 1-year option periods
Individual Laboratory Tests	7/22/96	Fleet and Industrial Supply Center San Diego, CA	Provide materials and services to perform various chemistry, serology, hematology, microbiology, and immunity tests for the Naval Hospital in Twenty-nine Palms, CA. Also provide courier service and a remote one-way teleprinter terminal.	1 year plus three 1-year options
Services to Perform Clinical Retroviral Tests	7/24/96	U.S. Army Division of Retrovirology Laboratory Frederick, MD	Provide clinical diagnostic support in performing clinical retroviral tests such as viral culture, PCR, Ripa, p24 antigen capture, and other assays. Storage of specimens is also required.	2 years with three 1-year options
Laboratory Testing Services	7/29/96	Medical Center Houston, TX	Furnish necessary labor, supplies, materials, and equipment to provide laboratory testing, courier service, detailed reports, report forms, data communication equipment, telephone modem, on-site printers, and dedicated telephone lines to the VA Outpatient Clinic in Beaumont, TX.	Base year of 12 months plus two 1-year option periods
Laboratory Drug Testing Services	8/2/96	U.S. Department of Justice Washington, DC	Laboratory drug testing services including screening and analysis of urine samples for the presence of various illegal drugs. Lab must follow strict chain of custody procedures, provide expert testimony, and be subject to regular inspections.	Base year of 12 months; four options which could extend contract for up to 60 months

(continued)

Table 5-1. Solicitation Announcements Listed in the *Commerce Business Daily*, March 1 through August 31, 1996 (continued)

Title	Date	Procurer	Description	Length of Contract
Medical Laboratory Testing Services	8/8/96	Ireland Army Community Hospital Fort Knox, KY	Provide a full range of lab services on approximately 516 different procedures, including emergency toxicology testing, STAT Lecithin/Sphingomyelin ratio and Phosphatidylglycerol testing by thin layer chromatography, and routine therapeutic drug testing.	1 year
Clinical Laboratory Testing Services	8/8/96	Federal Bureau of Prisons Atlanta, GA	Provide Clinical Laboratory Testing Services. Must have on-site licensed pathologist	1 year with four 1-year renewal options
Lab Testing	8/8/96	Department of Veterans Affairs Medical Center, Baltimore, MD	Provide laboratory specimen testing on an as-needed basis, including pickup and transport of specimens, pre-analytic processing, analysis and reporting of analytic results	1 year plus 2 option years
Reference Laboratory Services for Radioimmuno-assay Tests	8/16/96	VA Medical Center Bay Pines, FL	Provide Reference Laboratory Services for Radioimmunoassay (RIA) tests. Restricted to firms within 50-mile radius of the VA Medical Center	Unknown
Medical Laboratory Technician for the Federal Correctional Institution, Milan Michigan	8/21/96	Federal Bureau of Prisons, Lexington KY	Provide medical lab services including tests ordered. Tests include ALT, Albumin, Carbamazepine, CBC, Hepatitis A, Urinalysis, Chem 1 Profile. Daily pickup Monday through Friday, and emergency pickup with results available within 24 hours.	Base year not to exceed 12 months plus four 1-year option periods for renewal
Medical Laboratory Services	8/22/96	Federal Bureau of Prisons, North Central Regional Contracting Office Leavenworth, KS	Provide general lab services including providing supplies, pick-up of specimens, and various lab tests including CBCs, General Chemistries, Thyroid and Hepatitis Panels, U/As, Microbial Cultures and sensitivities, and therapeutic drug level monitoring.	Base year of 12 months plus four 1-year option periods

We also found 10 contract awards for lab services (Table 5-2). Although the contract award notices provide little detail about the scope of contractual work, they do offer some important insights about lab solicitations:

- Contract awards vary widely, ranging from one contract for $7,784 to three contracts worth more than $1 million, topped by a $12.9 million contract for drug screen testing.
- Winners run the gamut of the independent lab spectrum, including large national lab companies (SmithKline Beecham), specialized labs (Northwest Toxicology), regional labs (Princeton Biomedical Lab), and clinic and hospital-affiliated labs (Mayo Medical Laboratories).

5.3 RFPs

Level of Sophistication

Buyers are becoming increasingly sophisticated in the requirements presented in RFPs.

Buyers are becoming increasingly sophisticated in the requirements presented in RFPs. According to one LTAC member, RFPs have matured in complexity and quality in recent years. Purchasing managers for the soliciting organization have been increasingly involved in the development of the RFP. The LTAC member viewed this involvement as a positive influence that improves the contracting process by clearly specifying contract requirements and expectations. The LTAC member would be uncomfortable if the purchasing manager had sole responsibility for evaluating labs' bids, but the member reports that laboratorians generally remain involved in the evaluation process.

Writing an RFP

Dr. Ronald L. Weiss, an LTAC member, has coauthored an article on writing an RFP for reference laboratory services (Weiss and Ahlin, 1996). Weiss and Ahlin list the following key criteria for selecting a reference laboratory:

- certification and licensure,
- personnel requirements,
- quality control program,
- quality assurance and performance improvement,
- client service and satisfaction,
- scope of testing services,
- test requisitions,

Table 5-2. Contract Awards Listed in the *Commerce Business Daily*, March 1 through August 31, 1996

Contract awards ranged from $7,784 to $12.9 million.

Title	Date	Procurer	Winner	Amount
Medical Services CNT Purchase Order 0269-6	3/6/96	Department of Justice, Federal Bureau of Prisons	Princeton Biomedical Lab, Inc. Levittown, PA	$7,784
Laboratory Testing of Urine Samples CNT Tc-96-1139	5/6/96	Department of Treasury	Northwest Toxicology, Inc. Salt Lake City, UT	$120,542
Provide Laboratory Services CNT V515P-2730	6/3/96	Department of Veteran Affairs Medical Center	Regional Medical Laboratories, Inc. Battle Creek, MI	$28,708
Industrial Hygiene Laboratory Support CNT 240-96-0008	6/19/96	Health Resources and Services Administration	DataChem Laboratories Salt Lake City, UT	$995,000
Laboratory Testing Services CNT Order no. 9667223	6/26/96	Centers for Disease Control and Prevention	Public Health Foundation Enterprises, Inc. City of Industry, CA	$39,300
Laboratory Testing Services CNT Order no. 9667281	6/27/96	Centers for Disease Control and Prevention	Public Health Foundation Enterprises, Inc. City of Industry, CA	$39,300
Clinical Laboratory Services CNT J276c-236	7/8/96	Bureau of Prisons South Central Regional Office	SmithKline Beecham Clinical Laboratories Dallas, TX	$1,626,662
Laboratory Testing Services CNT N02-CL-40004	7/31/96	National Institutes of Health	Mayo Medical Laboratories Rochester, MN	$1,031,662
Laboratory Testing RFP 594-15-96	7/10/96	VA Medical Center	Doctor's Laboratory, Inc. Valdosta, GA	Not available
Drug Screening Laboratory CNT DASW01-96-D-0017	8/2/96	Defense Supply Service-Washington	Northwest Toxicology Salt Lake City, UT	$12,916,951

- logistical considerations,
- testing schedules,
- result reporting and interpretation,
- pricing and billing procedures,
- continuing education, and
- other services or compliance requirement.

Weiss and Ahlin also provide a sample table of contents for the RFP, examples of contractual "Standard Terms and Conditions," and example performance measures. The tables underline the theme that the contracting organization should carefully consider its needs and priorities and clearly state its contract specifications in the RFP.

Weiss and Ahlin recommend that the purchaser use as many objective measures as possible to evaluate lab bids; but they do not provide specific weights for individual criteria. They note that some purchasers develop detailed scoring systems with specific weights for various attributes, others apply a more subjective review, and others focus primarily on price.

Good and Bad RFPs

One of the LTAC members provided examples of both a good and a bad RFP. The bad example consisted primarily of a spreadsheet showing the expected volume, description, and CPT code for tests to be bid upon, as well as price, internal lab coding number, and "notes" columns to be filled in by the bidding lab. The cover page simply listed four additional contract requirements:

- monthly reports showing charges by test and volumes by test,
- remote inquiry capabilities and printer,
- late PM pickup, and
- supplies for tests not performed by the contracting organization.

Bad RFPs simply request price bids; good RFPs provide detailed information on contract requirements for

- lab accreditation,
- quality assurance,
- level of service,
- provision of supplies and test results, and
- bids on individual procedures.

In contrast, the good example contained 21 pages of instructions, as well as a 1-page attachment describing computer specifications. The first half of the instructions described the contracting organization, outlined the proposal process, discussed general contract terms and requirements, and provided general instructions to the proposal. The second half consisted of Technical

Specifications/Requests for Information that provided specific instructions for respondents to follow while forming their bids.

Of special interest was the following RFP clause in the introduction to this section: "It is anticipated that all bidding laboratories interested in this RFP are accredited by the College of American Pathologists (CAP) and CLIA. Consequently, certain information in a standardized format is presumed to be available for response to certain questions in this RFP." To the extent that labs already provide this information to accrediting and credentialling entities, the incremental burden of responding to the RFP will be lessened.

The RFP goes on to request information on

- facilities and equipment;
- personnel;
- quality control/quality assurance;
- split testing of specimens;
- accreditation, certification, and licensure;
- instrument maintenance;
- client references;
- scope of available testing;
- specimen collection and test ordering;
- transportation;
- turnaround time;
- reporting of results and interpretations;
- computer requirements;
- support services;
- billing; and
- pricing.

Government RFPs

To improve our understanding of the RFP process for federal lab contracts, we requested several RFPs from VA Medical Centers that placed contract solicitation announcements in the CBD.

To improve our understanding of the RFP process for federal lab contracts, we requested several RFPs from VA Medical Centers that placed contract solicitation announcements in the *CBD*. Some of the RFPs covered multiple facilities. In this subsection, we briefly describe the general contents of the RFPs, with special emphasis on the longest RFP we reviewed, a procurement from the VA Medical Center in Lake City, Florida.

Type of Negotiation. The RFPs generally specified "negotiated" procurements, rather than "sealed bids." An apparent consequence of this distinction is that details—including prices of individual tests—of negotiated procurements are not made public. Only final and total contract award amounts are released, and, according to one contract officer, there is no guarantee that the contract specifications of the contract actually signed match the specifications of the RFP.

Length. The RFPs ranged from 44 to 192 pages. Much of the longest RFP was devoted to government contract "boilerplate" and repeated spreadsheets for bidding prices in the optional years of the contract.

Supplies or Services and Prices/Costs. This section contained a spread sheet with information on covered tests and VA-estimated yearly quantity, and six columns for labs to fill out for each test:

- maximum turnaround time (VA prefers 24 hours or less),
- assay schedule,
- analytic time,
- assay method,
- test price, and
- annual test volume.

For the Lake City VA, 259 tests were included in the bid. There were also 61 overflow tests that were usually conducted by another VA lab, but that might be sent out to the winning lab in some cases. Labs bid costs for the overflow tests. The contract was for 1 year, with an option to renew for four additional 1-year periods. Identical spread sheets followed for the later years of the contract. Estimated volumes were very low for individual procedures (volumes ranged from 1 to 421 tests). A summary bid sheet added the bids for individual years.

Statement of Work. After definitions, the section stated that the lab would be required to

- provide necessary supplies;
- provide specimen pickup twice a day, Monday through Friday;
- transport samples with integrity;
- analyze samples;

- report results;
- provide test report summaries;
- consult by phone as needed; and
- provide VA labs with communication means for immediate inquiries.

Licensing and Accreditation. Mandatory requirements included the following:

- All required licenses, permits, accreditation, and certificates.
- Accreditation by the College of American Pathologists; furnish a current accredited certificate, along with a list of deficiencies.
- Accreditation by CDC required if proposer is engaged in interstate commerce.
- Lab director is licensed physician or licensed bioanalyst.
- For all referral testing, verify that the reference lab is CLIA-88 certified.

Quality Control. Requirements included the following:

- Indication of tests routinely performed in duplicate.
- Indication of average monthly tests for specified procedures that the lab performs.
- Coefficient of variation of quality control samples of all tests or specified tests that the lab performs.
- Inclusion of a list of tests outside of the ± 2SD range for past 2 years in the proficiency testing data. Contractor shall notify of any test falling outside this range during contract.
- Provision of address of processing sites under contract, including subcontracted testing location sites.
- Maintenance by each VA facility of an internal quality control program to monitor the quality of test results received from the contractor. Unidentified split specimens may be sent periodically to the contractor for testing, and may also be sent to another reference lab for comparison. Split specimen testing shall not exceed 1 percent of the total annual volume and shall be processed free of charge.
- Examination of facilities, methodologies, and quality control procedures by representatives of the VA.

Service. Bidders were to do the following:

- Provide phone number and contact person.
- Maintain minimum acceptable service, reporting systems, and quality control as specified here. Immediate notification must be given to VA if adverse action by regulatory agency.

- Submit with this proposal a percentage discount off a specified published price list for all tests other than those detailed in Section B. Any new tests or tests sent to a subcontractor should be covered under the discounts.
- Assign a local account representative to each facility.
- Advise facility of any changes in processing.

Telecommunications. Labs were required to

- transmit results to a teleprinter at the site,
- provide maintenance,
- train hospital personnel in routine operations, and
- have a validation service.

Benchmark Reference. The VA reserved the right to submit a number of specimens for analysis as a benchmark reference as part of the proposal process and without charge.

Proposal Format and Evaluation of Proposals. The following were required for the Lake City VA procurement:

- Cover Letter
- Table of Contents
- Certification
- Lab Testing Manual
- Capabilities
  - ✓ Background
  - ✓ Experience
  - ✓ Address and phone numbers of all relevant offices
  - ✓ Subcontractors
- Test Methodology
- Specimen Handling and Pick-Up Procedure
- Quality Control
- Reporting Protocols

Evaluation. For the Lake City VA procurement, Technical Evaluation (A-D) was given twice the weight of the Cost Evaluation (E). Factors A-D were each given equal weight:

A. Resources required (16.7 percent)
B. Quality assurance systems (16.7 percent)
C. Services available (16.7 percent)
  - ✓ Turnaround time

  - ✓ Operational system

D. Results of VA inspection and various verification procedures (16.7 percent)

  - ✓ Inspection
  - ✓ Processing unknown samples

E. Cost (33.3 percent)

  - ✓ Lowest price received maximum points
  - ✓ Points for other bids were prorated by ratio of lowest cost/bid cost

Discussion

VA RFPs may provide useful templates for the development of RFP sections on statement of work, licensing and accreditation, service, and quality control requirements.

Although the bidding design of the Medicare demonstration project may differ substantially from the design of the VA procurements, several sections of the VA RFPs may be incorporated into the Medicare RFP. In particular, the VA RFPs may provide useful templates for the development of RFP sections on statement of work, licensing and accreditation, service, and quality control requirements.

5.4 QUALITY

We asked a number of LTAC members and experts questions about monitoring quality.

Members generally agreed that CLIA 88 alone does not guarantee lab quality. Two LTAC members suggested that CLIA has had little effect on test quality, at least in independent labs. "CLIA is so watered down now that it doesn't make a difference," said one. Another said that CLIA has contributed to an overall reduction in lab labor quality. According to this member, "some labs have taken the CLIA minimum standard as THE standard," and hired minimally trained technicians in response.

Some members also expressed concern that the RFP process alone cannot fully ensure quality. "You can't construct an RFP that fully covers quality," said one LTAC member. Members felt that additional monitoring is necessary to maintain contract performance. At the same time, they also pointed out that labs have strong incentives to provide quality to maintain long-term relationships with purchasers.

Members indicated that long-distance transport of certain lab tests does require careful quality assurance procedures. For example, specimens for acid phosphatase and creatine must be frozen quickly, and specimens for vitamin B-12 and folate tests must be stabilized and refrigerated within 8 hours. For most lab tests, however, long-distance transport is possible, as long as correct procedures are followed. Labs must have written policies on transport; reputable labs follow these policies carefully.

The ARUP Laboratories, Inc., a national reference lab located in Salt Lake City, Utah, provides an example of how large independent labs can use long-distance transport to serve clients across a wide geographic area. ARUP serves accounts in 48 of 50 states, with specimens transported daily by commercial airline (ARUP reportedly is Delta Airline's largest commercial cargo client at the airline's Salt Lake City hub).

Several members suggested that split-sampling could be used to enhance quality control and monitor performance by labs winning bidding competitions. Other methods for assuring quality during the demonstration cited include

- feedback from physicians and nurse practitioners, and
- a built-in system for monitoring and responding to physician complaints.

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Appendix A:

Summary of HCFA Preliminary Data from Carriers on Independent Lab Market Shares

Table A-1. Summary of HCFA Preliminary Data: Alabama

Lab Name	Market Share	Adjusted Market Share
Alabama Ref Lab	22.8	13.6
Roche Biomedical Lab Inc. (now part of LabCorp)	13.4	8.0
Allied Clin. Lab (now part of LabCorp)	11.0	6.6
Lab South	8.2	4.9
SmithKline	8.1	4.8
Shoals Med. Lab	5.4	3.2
Dermato Pathologic Services	4.0	2.4
Norwood Clinic	3.1	1.9
Carroll Med. Lab	2.9	1.8
Pathology Assoc.	2.3	1.4
Pathology Laboratory	2.2	1.3
Cytology and Path. Ser.	1.7	1.0
Physicians Ref.	1.4	<1.0
Adams & Bridger Path. Lab	1.2	<1.0
Internal Medicine Lab	1.2	<1.0
Health Service Lab	1.1	<1.0
Colbert Laboratory Inc.	1.0	<1.0
Roche (now part of LabCorp)	—	40.5

Notes: Basis for determining: Allowed charges. Denominator=$22.8M. (CIGNA records indicate LabCorp does about $15.6M in business in its AL labs). The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-2. Summary of HCFA Preliminary Data: Alaska

Lab Name	Market Share	Adjusted Market Share[a]
Physicians Medical Lab	93.4	—
Geneva Woods Diag. Lab	3.0	—
Fairbanks	2.0	—
National Health Lab	1.6	—

Notes: Basis for determining: Dollars paid in FY94. Denominator=$96K.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-3. Summary of HCFA Preliminary Data: Arizona

Lab Name	Market Share	Adjusted Market Share
National Health Lab	35.2	34.9
MetWest of Arizona (owned by Corning)	17.4	17.2
Sonora Lab	13.7	13.6
Mayo Clinic of Scottsdale	8.0	7.9
TMOKE Lab	5.6	5.5
Damon Clinical Lab (owned by Corning)	4.0	3.9
Bradshaw Clinical Lab	3.1	3.0
Advanced Medical	2.5	2.5
Thomas Davis Clinic Lab	1.3	1.3
Phoenix Medical	1.3	1.3
Integrated Clinical	1.2	1.1
Alliance Medical	1.2	1.2
SmithKline Beecham	—	<1.0

Notes: Basis for determining: Allowed charges. Denominator=$32.1M. (Delaware carrier records include $0.3M in allowed charges by SmithKline Beecham labs in AZ). The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-4. Summary of HCFA Preliminary Data: California (Blue Shield of CA)

Lab Name	Market Share	Adjusted Market Share[a]
Spectra Laboratories	26.0	—
Meris Labs, Inc.	13.1	—
Physicians Clinical Lab (spun off from Corning/Damon)	16.1	—
SmithKline Beecham	12.1	—
Pathlab	7.7	—
Unilab	7.2	—
S.C. Shaffer Labs	2.7	—
Satellite Dialysis Lab	2.1	—
Mayo Lab Network	0.9	—

Notes: Basis for determining: Submitted charges. Denominator=$74M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-5. Summary of HCFA Preliminary Data: Florida

Lab Name	Market Share	Adjusted Market Share
Corning Clinical Lab	23.0	20.2
National Health Labs	10.7	9.4
REN Lab (REN is a kidney dialysis center)	9.7	8.5
American Laboratory Assoc.	9.4	8.3
Clearwater Clinical Lab	6.2	5.5
Clinical Lab Services, Inc.	5.9	5.2
Aceituno Clinical Lab	5.3	4.7
ARM Medical Laboratories	5.2	4.6
International Medical Lab	3.9	3.4
Horizon Labs	3.8	3.3
Sayet Assoc. Path.	2.8	2.5
Cleveland Clinic Florida	2.8	2.5
Mayo Clinic	2.7	2.4
Delray Medical Lab	2.5	2.2
Medical Tech. Lab	2.4	2.1
Watson Clinic	1.7	1.5
Diagnostic Clinic Lab	1.4	1.2
METPATH	0.5	<1.0
SmithKline Beecham	—	8.8
Roche (now part of LabCorp)	—	3.5

Notes: Basis for determining: Allowed charges for top 18 labs in FY95. Denominator=$102.7M. (CIGNA records indicate that LabCorp did about $3.9M in business in its FL labs in CY94. Delaware carrier records include $10.3M in allowed charges by SmithKline Beecham labs in FL.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-6. Summary of HCFA Preliminary Data: Georgia

Lab Name	Market Share	Adjusted Market Share
SmithKline Beecham	51.7	49.0
Corning Clinical Lab	20.5	19.4
Doctors Lab	10.8	10.2
Carroll Medical Lab	5.4	5.1
Mullins	4.3	4.0
Unilab Diagnostic Inc.	1.4	1.3
Atlanta Medical Associates	1.2	1.1
Harbin Clinical Lab	1.8	1.7
Roche (now part of LabCorp)	—	5.2

Notes: Basis for determining: Services performed in CY94. Denominator=13.4M. (CIGNA records indicate that LabCorp does about $2.0M of business in its GA labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-7. Summary of HCFA Preliminary Data: Hawaii

Lab Name	Market Share	Adjusted Market Share[a]
Diagnostic Lab Services	70.4	—
Clinical Lab of Hawaii	27.0	—
Medical Associates	1.0	—

Notes: Basis for determining: Dollars paid. Denominator=$4.3M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-8. Summary of HCFA Preliminary Data: Illinois

Lab Name	Market Share	Adjusted Market Share
SmithKline Beecham	4.7	1.2
Faney Med Center	4.4	1.2
Stat Medical Lab	4.4	1.2
Freeport Clinic	4.2	1.1
Northwestern Univ. Labs	4.1	1.1
Midwest Regional Lab	4.0	1.1
Tree Town Clinical Lab	4.0	1.1
Morton Med. Lab	3.5	<1.0
Ingalls Family Care Center	3.4	<1.0
DuPage Coagulation Center	3.3	<1.0
Doctors General Lab	3.2	<1.0
Royal Crown Labs	3.0	<1.0
Arlington Med. Lab	2.8	<1.0
Unilab Inc.	2.7	<1.0
Community Health and Emer.	2.7	<1.0
Clinic Lab Carbondale	2.5	<1.0
Delm Med. Lab	2.4	<1.0
Benton Medical Lab	2.3	<1.0
Parke Dewatt Labs	2.3	<1.0
Pekin Intern Med.	2.1	<1.0
Pinnacle Health Services Lab	2.0	<1.0
Cytology Unlimited	2.0	<1.0
Physicians Clinical Lab	1.8	<1.0
COS X-Ray	1.7	<1.0
Metpath (owned by Corning)	1.7	<1.0
U.S. Clinical Lab	1.7	<1.0
Madison Med. Lab	1.7	<1.0
Sherman Analytics	1.6	<1.0
Medway Diagnostic Labs	1.3	<1.0
Blass Clinical Lab	1.2	<1.0
Thornburg Clin. Lab	1.1	<1.0
Propath Inc.	1.1	<1.0
Lius Med. Lab	1.1	<1.0
Putnam County Lab	1.0	<1.0
SmithKline Beecham	—	66.2
Roche (now part of LabCorp)	—	7.5

Notes: Basis for determining: Services performed. Denominator=225K services. (CIGNA records indicate that LabCorp performed about 64,000 services in its IL labs. Delaware carrier records indicate that SmithKline Beecham labs performed about 565,000 services in its IL labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-9. Summary of HCFA Preliminary Data: Indiana

Lab Name	Market Share	Adjusted Market Share[a]
South Bend Medical	20.2	—
Pathologists Assoc.	12.1	—
Accustat Med Lab	9.5	—
The Med Lab. of Drs.	9.1	—
Terre Haute Medical	7.7	—
Northern Indiana Clin.	6.6	—
Arnete Clinic Lab	4.4	—
Indiana Clinical	4.4	—
South Bend Clinic Lab	3.0	—
Greenwood Medical Lab	2.8	—
Columbus Health Lab	2.5	—
Dermatopathology Lab	1.8	—
Twin Rivers Medical	1.7	—
Hills Medical Lab	1.5	—
Thirty One Seventy One	1.3	—
Medical Center of	1.3	—
Stat Labs, Inc.	1.0	—

Notes: Basis for determining: Allowed charges. Denominator=$34M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-10. Summary of HCFA Preliminary Data: Kentucky

Lab Name	Market Share	Adjusted Market Share[a]
Kentucky		
(No names available)		
	10.4	
	6.1	

Notes: Basis for determining: Total claims in CY94 (not just lab claims). Denominator=9.9M total claims (not just lab claims). (CIGNA records indicate LabCorp does about $0.2M in business in its KY labs, which would produce a market share < 1%.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-11. Summary of HCFA Preliminary Data: Maryland

Lab Name	Market Share	Adjusted Market Share
Corning	69.6	62.7
Hagerstown Med. Lab	3.5	3.2
University of Maryland	3.0	2.7
Nacod	2.7	2.4
Medilab of Cumberland	2.2	2.0
Baltimore Clinical Lab	2.1	1.9
Diagnostic Pathology Lab	1.1	<1.0
Johns Hopkins Univ.	1.1	<1.0
Park Medical Labs	1.0	<1.0
SmithKline Beecham	—	9.9
Roche (now part of LabCorp)	—	<1.0

Notes: Basis for determining: Services performed in CY94. Denominator=2.0M services. (CIGNA records indicate that LabCorp does a small amount of business in its MD labs. Delaware carrier records include $3.1M in allowed charges and 247,549 services by SmithKline Beecham labs in MD.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-12. Summary of HCFA Preliminary Data: Michigan

Lab Name	Market Share	Adjusted Market Share
Corning Clinical Lab	46.0	44.4
Dearborn Regional Clin. Lab	12.4	12.0
National Health Lab	7.0	6.8
Universal Standard Med.	7.0	6.8
Detroit Biomedical Lab	5.6	5.4
DMC University Lab	3.4	3.3
Regional Medical Inc.	2.7	2.6
Biotech Cln Lab	2.3	2.2
St. John Amb. Care Co.	2.4	2.3
Citation Clin. Lab	1.6	1.5
Burns Clinical Med.	1.4	1.4
Metro Medical Group	1.1	1.1
SmithKline Beecham	—	3.3

Notes: Basis for determining: Services performed. Denominator=2,348,000 services. (Delaware carrier records indicate that SmithKline Beecham performs about 59,000 services at its MI labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-13. Summary of HCFA Preliminary Data: Mississippi

Lab Name	Market Share	Adjusted Market Share
(No names available)	29.2	11.8
	24.3	9.8
	6.9	2.8
	6.8	2.7
	4.2	1.7
	4.2	1.7
	3.6	1.5
	3.2	1.3
	2.3	<1.0
	2.1	<1.0
	1.7	<1.0
	1.7	<1.0
	1.6	<1.0
	1.2	<1.0
	1.1	<1.0
	1.0	<1.0
Roche (now part of LabCorp)	—	33.0
SmithKline Beecham	—	26.6

Notes: Basis for determining: Dollars paid in CY94. Denominator=$14.2M. (CIGNA records indicate LabCorp does about $11.7M in business in its MS lab. Delaware carrier records include $9.3M in allowed charges by SmithKline Beecham labs in MS.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-14. Summary of HCFA Preliminary Data: Nevada

Lab Name	Market Share	Adjusted Market Share[a]
Associates Path. Lab	56.5	—
Sierra Nevada Lab (owned by NHL/LabCorp)	37.0	—
Sunrise Diagnostic Lab	2.0	—
Western Pathology Cons.	1.7	—

Notes: Basis for determining: Charges. Denominator=$10.5M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-15. Summary of HCFA Preliminary Data: New York—Queens

Lab Name	Market Share	Adjusted Market Share[a]
American Health Lab	24.1	—
Metropolitan Med Lab	11.4	—
Ruppi	10.5	—
EMA Med Lab	10.0	—
United Health Labs	7.1	—
Health Care Lab	6.3	—
Morti Lab	5.8	—
Oral Pathology Lab	5.0	—
Downstate Clin. Lab	4.3	—
Qualicare Med Lab	4.1	—
Bayside Labs	3.5	—
Queens Med Lab	2.3	—
Astra Clin. Lab	1.8	—
AJC Lab	1.8	—
Stat Med Lab	1.4	—

Notes: Basis for determining: Allowed charges. Denominator=$4.0M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-16. Summary of HCFA Preliminary Data: North Carolina

Lab Name	Market Share	Adjusted Market Share[a]
Roche (now part of LabCorp)	56.4	—
National Health Labs (now part of LabCorp)	29.4	—
Neil Diagnostic Lab	3.0	—
Boice Willis Clinic Lab	1.8	—
Kernodle Clinic Lab	1.5	—
Mecklenburg Medical Group	1.1	—
Carolina Internal Med Assoc.	1.0	—
Triad Clinicallab, Inc.	1.0	—

Notes: Basis for determining: Allowed charges for selected procedures. Denominator=$37.2M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-17. Summary of HCFA Preliminary Data: Ohio

Lab Name	Market Share	Adjusted Market Share
Clinical Health Lab	13.5	12.5
Doctors Clinical Lab	8.9	8.2
Suburban Medical Lab	7.8	7.2
Compunet Clinical Lab	7.2	6.6
Southgate Medical Lab	7.2	6.6
Richfield Lab	6.1	5.6
Clinical Path. Fac. of Ohio	6.0	5.5
Clinitec Lab	4.3	4.0
Pathology Labs	4.1	3.8
Medi Lab, Inc.	3.1	2.9
n/a	2.2	2.0
n/a	2.1	1.9
Total Med Lab	2.0	1.9
n/a	1.8	1.7
n/a	1.7	1.6
n/a	1.6	1.5
n/a	1.5	1.4
n/a	1.3	1.2
n/a	1.1	1.0
n/a	1.1	1.0
SmithKline Beecham	—	7.6

Notes: Basis for determining: Allowed charges for 7/95 through 9/95. Denominator=$11.9M for 3 months. (Delaware carrier records include $4.0M in allowed charges by SmithKline Beecham labs in OH, which, divided by 4, would convert to a market share of about 7.6% using the same quarterly denominator as for the other labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-18. Summary of HCFA Preliminary Data: Oregon

Lab Name	Market Share	Adjusted Market Share[a]
Nichols (owned by Corning)	54.2	—
Oregon Medical Lab	17.2	—
Interpath Lab	4.4	—
North Bend	3.8	—
Harvard Lab	3.1	—
Corvallis Clinical Lab	2.8	—
AO Northwest Lab	2.3	—
Bridge View Lab	1.7	—
Coast Medical Lab	1.4	—
DH McGowan	1.3	—
St. Vincent's Hospital Lab	1.0	—

Notes: Basis for determining: Dollars paid in FY94. Denominator=$4.4M. The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-19. Summary of HCFA Preliminary Data: Puerto Rico

Lab Name	Market Share	Adjusted Market Share[a]
Laboratorio Clinico Borinquen	25.2	—
Caparsa Clinic Laboratory	15.6	—
Laboratorio Clinico Ref. Del Este	11.4	—
Laboratorio Clinico Jerico	9.1	—
Laboratorio Clinico San Agustin	8.8	—
Laboratorio Clinico Chegar	5.6	—
Mayaguez Endocrine Lab.	5.4	—
Lab Clinico CDT Amb. San Sabastian	5.2	—
Laboratorio Clinico Las Marias	4.9	—
Laboratorio Clinico Doctor Center	4.5	—
Lab. Endocrinologo Bayamon	4.2	—

Notes: Basis for determining: Allowed charges. Denominator=$8.0M. The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-20. Summary of HCFA Preliminary Data: Tennessee

Lab Name	Market Share	Adjusted Market Share
Allied Clinical Labs (owned by NHL/LabCorp)	29.4	21.8
LabCorp-NC-Xovers	21.1	15.6
Dialysis Clinic Inc.	14.1	10.4
Specialized Assays (owned by Corning)	11.1	8.2
MPHS Path Lab	10.4	7.7
Medex Laboratories	4.0	3.0
Doctor's Pathology Services	2.6	1.9
Memphis Clinical Laboratory	2.0	1.5
Woodbury Clinical Lab	2.0	1.5
U.T. Med.—Clinical Lab	1.2	.9
SmithKline Beecham	—	25.9

Notes: Basis for determining: Allowed charges for selected procedures. Denominator=$23.2M. (SmithKline Beecham did about $8.0M in total business in TN.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-21. Summary of HCFA Preliminary Data: Virginia

Lab Name	Market Share	Adjusted Market Share
SmithKline Beecham	28.1	12.8
Piedmont Medical Lab	12.0	5.5
NDC Medical Center Lab	10.7	4.9
Lewis-Gale Clinic	7.0	3.2
Medical Labs of Virginia	6.4	3.0
Valley Medical Labs	5.1	2.3
Path. Consultants of Cent. Vir.	5.0	2.3
Medical Specialists Inc.	4.9	2.2
Blue Ridge Pathologists	4.1	1.9
Pratt Medical Center	3.9	1.8
Evans Acad. Physicians	2.4	1.1
Virginia Biotech	2.0	<1.0
Roche Biomedical	1.4	<1.0
Appalachian Lab	1.4	<1.0
Poplar Hill	1.3	<1.0
MCV Assoc. Phys.—Oral Path.	1.0	<1.0
Roche (now part of LabCorp)	—	54.6

Notes: Basis for determining: Allowed charges in CY94. Denominator=$8.8M. (CIGNA records indicate that LabCorp does about $10.6M of business in its VA labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-22. Summary of HCFA Preliminary Data: Washington

Lab Name	Market Share	Adjusted Market Share[a]
National Health Lab (now part of LabCorp)	39.0	—
Pathology Assoc. Medical Lab	17.4	—
Lab of Path. of Seattle	6.6	—
Olympia Medical Lab	4.3	—
Skagit Valley Labs	3.7	—
Medical Center Lab	3.4	—
Pathologist Reg. Lab	2.9	—
Columbia Medical Lab	2.9	—
Corning Clinical Labs	2.7	—
Olympic Medical Lab	2.4	—
Wenatchee Valley Clinical Lab	2.2	—
Steck Medical Group Lab	1.3	—
Reg. Medical Lab	1.3	—
Western Lab	1.2	—
Sacred Heart Medical Center	1.2	—
Skagit Valley Lab	1.2	—
Biocom Medical Lab	1.2	—

Notes: Basis for determining: Submitted charges. Denominator=Not available. (Delaware carrier records include $4.1M in allowed charges by SmithKline Beecham labs in WA, the previous HCFA information only contained market shares and not total allowed charges so we cannot compute a market share. It is likely to be significant, however.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

Table A-23. Summary of HCFA Preliminary Data: West Virginia

Lab Name	Market Share	Adjusted Market Share
General Consultants Lab	31.3	5.0
John Marshall Med. Serv.	12.8	2.0
Fairmont Clin. Lab	9.2	1.6
n/a	8.6	1.4
n/a	8.3	1.3
St. Francis West Health	5.1	<1.0
n/a	4.1	<1.0
n/a	4.0	<1.0
n/a	3.8	<1.0
n/a	3.2	<1.0
n/a	2.0	<1.0
n/a	1.9	<1.0
n/a	1.8	<1.0
Roche (now part of LabCorp)	—	84.2

Notes: Basis for determining: Allowed charges for 7/95 through 9/95. Denominator=$305K. (CIGNA records indicate LabCorp did about $6.5M in business in its WV labs in 1994, which, divided by 4, would produce a market share of about 84.2% using the same denominator as for the other labs.) The adjusted market share for each state was calculated by including claims for SmithKline Beecham and LabCorp labs in the state. The adjusted market share figures must be interpreted cautiously because carriers did not report their data in uniform ways.

Table A-24. Summary of HCFA Preliminary Data: Wisconsin

Lab Name	Market Share	Adjusted Market Share[a]
Marshfield Med Ctr. Lab	40.0	—
Bayshore Clin. Labs	14.0	—
Medical Science Labs	14.0	—
National Health Labs	8.0	—
General Medical Labs	6.0	—
Consultant Labs of WI	6.0	—
Consultant Phys. Path.	4.0	—
Monroe Clinic/Saint Clare Lab	4.0	—

Notes: Basis for determining: Allowed charges for 1/95 through 10/23/95. Denominator=$9.7M.

[a] No adjustment needed because SmithKline Beecham and LabCorp lab claims were not processed by out-of-state carriers.

As noted parenthetically above, the Delaware carrier processes claims for SmithKline Beecham labs in some, but not all states. The Delaware carrier processes claims for SmithKline Beecham labs in the states shown in Table A-25.

Table A-25. Claims Processed by the Delaware Carrier for SmithKline Beecham by State

State	Allowed Charges
Arizona[a]	326,539
California (Southern)	7,145,456
Delaware	2,845
Florida[a]	10,294,498
Illinois	7,178,101
Louisiana	3,904,765
Massachusetts	3,464,317
Maryland[a]	3,135,906
Michigan	1,160,905
Minnesota	2,950,006
Mississippi[a]	9,324,401
New York	17,322,350
Ohio	4,012,989
Pennsylvania	18,627,520
Tennessee[a]	8,073,507
Texas	2,941,627
Washington	4,060,751

[a] State data included.

Appendix B:

Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide
Lab procedures varied greatly in allowed charges and volume.

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
36415	Routine venipuncture for collection of specimen	129	2,718,141	0.09	32	2,047,380	0.65
80002	1-2 clinical chemistry tests	30	22,044,111	0.74	20	3,235,803	1.03
80003	3 clinical chemistry tests	54	10,950,792	0.37	44	1,236,750	0.40
80004	4 clinical chemistry tests	50	11,539,807	0.39	40	1,339,416	0.43
80005	5 clinical chemistry tests	68	7,593,869	0.26	70	780,983	0.25
80006	6 clinical chemistry tests	45	13,821,465	0.47	39	1,438,177	0.46
80007	7 clinical chemistry tests	24	27,307,811	0.92	28	2,630,911	0.84
80008	8 clinical chemistry tests	77	6,725,516	0.23	83	610,949	0.20
80009	9 clinical chemistry tests	97	4,224,208	0.14	100	376,462	0.12
80010	10 clinical chemistry tests	103	3,791,197	0.13	104	333,874	0.11
80011	11 clinical chemistry tests	149	1,946,615	0.07	136	169,130	0.05
80012	12 clinical chemistry tests	80	6,614,767	0.22	86	562,526	0.18
80016	13-16 blood/urine tests	16	38,495,295	1.30	27	2,730,400	0.87
80018	17-18 blood/urine tests	22	32,643,684	1.10	31	2,338,780	0.75
80019	19 blood/urine tests	1	254,418,618	8.59	3	17,644,690	5.64
80050	General health panel	74	6,961,093	0.24	141	162,735	0.05
80055	Obstetric panel	507	42,299	0.00	584	1,378	0.00
80058	Hepatic function panel	61	8,604,100	0.29	64	885,961	0.28
80059	Hepatitis panel	116	3,179,674	0.11	239	44,646	0.01
80061	Lipid panel	9	90,906,979	3.07	14	4,541,265	1.45
80072	Arthritis panel	141	2,102,253	0.07	208	62,109	0.02
80090	Torch antibody panel	417	99,512	0.00	564	1,755	0.00
80091	Thyroid panel	23	30,796,066	1.04	36	1,757,267	0.56
80092	Thyroid panel w/TSH	4	117,118,714	3.95	25	2,935,232	0.94
80100	Drug screen	172	1,451,901	0.05	170	109,814	0.04
80101	Drug screen	188	1,140,086	0.04	161	130,548	0.04
80102	Drug confirmation	346	182,323	0.01	353	11,265	0.00
80103	Drug analysis, tissue prep	873	54	0.00	874	3	0.00
80150	Assay of amikacin	500	44,584	0.00	527	2,581	0.00
80152	Assay of amitriptyline	285	326,203	0.01	328	14,112	0.00
80154	Assay of benzodiazepines	265	401,791	0.01	306	17,983	0.01
80156	Assay carbamazepine	72	7,416,400	0.25	99	376,562	0.12
80158	Assay of cyclosporine	117	3,172,380	0.11	152	147,857	0.05
80160	Assay of desipramine	325	230,904	0.01	367	10,194	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
80162	Assay for digoxin	12	59,457,910	2.01	21	3,171,203	1.01
80164	Assay, dipropylacetic acid	114	3,280,877	0.11	130	189,171	0.06
80166	Assay of doxepin	356	164,645	0.01	385	8,831	0.00
80168	Assay of ethosuximide	533	34,538	0.00	566	1,730	0.00
80170	Gentamicin	299	288,804	0.01	319	15,604	0.00
80172	Assay for gold	584	20,220	0.00	574	1,530	0.00
80174	Assay of imipramine	367	146,443	0.00	442	6,474	0.00
80176	Assay for lidocaine	544	31,429	0.00	518	2,749	0.00
80178	Assay for lithium	115	3,267,848	0.11	101	368,308	0.12
80182	Assay for nortriptyline	205	893,907	0.03	224	52,180	0.02
80184	Assay for phenobarbital	106	3,589,332	0.12	120	235,800	0.08
80185	Assay for phenytoin	31	20,988,865	0.71	50	1,157,479	0.37
80186	Assay for phenytoin, free	232	611,364	0.02	251	32,832	0.01
80188	Assay for primidone	222	715,266	0.02	257	31,646	0.01
80190	Assay for procainamide	251	469,371	0.02	292	20,494	0.01
80192	Assay for procainamide	178	1,346,477	0.05	217	57,772	0.02
80194	Assay for quinidine	122	3,018,793	0.10	151	149,572	0.05
80196	Assay for salicylate	337	205,792	0.01	287	21,389	0.01
80198	Assay for theophylline	44	14,681,037	0.50	72	768,664	0.25
80200	Assay for tobramycin	397	115,766	0.00	437	6,782	0.00
80202	Assay for vancomycin	179	1,314,620	0.04	183	87,114	0.03
80299	Quantitative assay, drug	140	2,129,110	0.07	169	111,072	0.04
80400	Acth stimulation panel	529	36,379	0.00	608	1,006	0.00
80402	Acth stimulation panel	669	6,610	0.00	786	79	0.00
80406	Acth stimulation panel	831	420	0.00	861	7	0.00
80408	Aldosterone suppression eva	764	1,885	0.00	825	29	0.00
80410	Calcitonin stimulation panel	840	335	0.00	871	3	0.00
80412	CRH stimulation panel	775	1,613	0.00	860	7	0.00
80414	Testosterone response	877	30	0.00	880	1	0.00
80415	Estradiol response panel	868	67	0.00	877	2	0.00
80418	Pituitary evaluation panel	625	11,382	0.00	732	200	0.00
80420	Dexamethasone panel	684	5,316	0.00	790	77	0.00
80422	Glucagon tolerance panel	735	2,765	0.00	798	63	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
80424	Glucagon tolerance panel	881	11	0.00	876	3	0.00
80426	Gonadotropin hormone panel	706	4,088	0.00	823	30	0.00
80428	Growth hormone panel	743	2,514	0.00	778	98	0.00
80430	Growth hormone panel	810	802	0.00	829	27	0.00
80432	Insulin suppression panel	792	1,240	0.00	855	9	0.00
80434	Insulin tolerance panel	649	8,203	0.00	718	242	0.00
80435	Insulin tolerance panel	861	133	0.00	864	6	0.00
80436	Metyrapone panel	823	554	0.00	863	6	0.00
80438	TRH stimulation panel	425	92,666	0.00	522	2,666	0.00
80439	TRH stimulation panel	604	15,928	0.00	749	142	0.00
80440	TRH stimulation panel	762	2,004	0.00	847	17	0.00
81000	Urinalysis, nonauto, w/scope	10	81,250,559	2.74	2	18,589,319	5.94
81002	Urinalysis nonauto w/o scope	52	11,350,198	0.38	19	3,409,871	1.09
81003	Urinalysis, auto, w/o scope	110	3,459,703	0.12	52	1,125,263	0.36
81005	Urinalysis	169	1,557,843	0.05	87	533,980	0.17
81007	Urine screen for bacteria	358	158,724	0.01	236	45,176	0.01
81015	Microscopic exam of urine	134	2,374,942	0.08	85	597,169	0.19
81025	Urine pregnancy test	497	45,513	0.00	416	7,434	0.00
81050	Urinalysis, volume measure	362	155,690	0.01	244	41,197	0.01
81099	Urinalysis test procedure	492	48,777	0.00	398	8,238	0.00
82000	Assay blood acetaldehyde	576	21,722	0.00	577	1,473	0.00
82003	Assay acetaminophen	508	41,777	0.00	548	2,150	0.00
82009	Test for acetone/ketones	447	73,071	0.00	342	12,194	0.00
82010	Acetone assay	456	69,923	0.00	421	7,280	0.00
82013	Acetylcholinesterase assay	733	2,910	0.00	719	234	0.00
82024	ACTH	283	327,842	0.01	389	8,611	0.00
82030	ADP & AMP	606	15,767	0.00	653	552	0.00
82040	Assay serum albumin	275	341,439	0.01	215	58,561	0.02
82042	Assay urine albumin	395	118,636	0.00	290	20,772	0.01
82043	Microalbumin, quantitative	268	391,376	0.01	220	53,903	0.02

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82044	Microalbumin, semiquant	353	167,564	0.01	263	30,579	0.01
82055	Assay ethanol	305	273,653	0.01	296	19,814	0.01
82075	Assay breath ethanol	830	426	0.00	793	74	0.00
82085	Assay of aldolase	274	352,405	0.01	269	26,083	0.01
82088	Aldosterone	224	693,705	0.02	329	13,884	0.00
82091	Aldosterone saline test	870	59	0.00	858	9	0.00
82101	Assay of urine alkaloids	681	5,438	0.00	748	148	0.00
82103	Alpha-1-antitrypsin, total	324	231,261	0.01	321	15,462	0.00
82104	Alpha-1-antitrypsin, pheno	521	38,151	0.00	552	2,073	0.00
82105	Alpha-fetoprotein, serum	226	666,962	0.02	250	32,925	0.01
82106	Alpha-fetoprotein; amniotic	635	10,188	0.00	655	551	0.00
82108	Assay, aluminum	55	10,882,685	0.37	106	322,848	0.10
82128	Test for amino acids	678	5,572	0.00	693	333	0.00
82130	Amino acids analysis	270	377,971	0.01	379	9,227	0.00
82131	Amino acids	271	358,627	0.01	334	13,278	0.00
82135	Assay, aminolevulinic acid	634	10,203	0.00	651	559	0.00
82140	Assay of ammonia	208	867,309	0.03	238	44,840	0.01
82143	Amniotic fluid scan	839	350	0.00	816	41	0.00
82145	Assay of amphetamines	427	91,383	0.00	459	5,248	0.00
82150	Assay of amylase	81	6,398,542	0.22	74	740,757	0.24
82154	Androstanediol glucuronide	760	2,034	0.00	803	54	0.00
82157	Assay of androstenedione	489	51,693	0.00	576	1,478	0.00
82160	Androsterone assay	774	1,627	0.00	797	64	0.00
82163	Assay of angiotensin II	737	2,717	0.00	767	114	0.00
82164	Angiotensin I enzyme test	331	218,402	0.01	349	11,620	0.00
82172	Apolipoprotein	47	13,017,066	0.44	76	677,324	0.22
82173	Arginine tolerance test	844	300	0.00	775	102	0.00
82175	Assay of arsenic	392	120,546	0.00	429	6,962	0.00
82180	Assay of ascorbic acid	411	104,335	0.00	386	8,824	0.00
82190	Atomic absorption	686	5,213	0.00	627	782	0.00
82205	Assay of barbiturates	296	292,298	0.01	293	20,093	0.01
82232	Beta-2 protein	173	1,435,346	0.05	200	66,226	0.02
82239	Bile acids, total	545	31,263	0.00	587	1,359	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82240	Bile acids, cholylglycine	405	107,892	0.00	489	3,888	0.00
82250	Assay bilirubin	345	182,652	0.01	255	31,917	0.01
82251	Assay bilirubin	464	65,054	0.00	375	9,600	0.00
82252	Fecal bilirubin test	622	11,609	0.00	546	2,160	0.00
82270	Test feces for blood	34	18,866,934	0.64	10	6,479,944	2.07
82273	Test for blood, other source	348	182,203	0.01	231	47,904	0.02
82286	Assay of bradykinin	867	78	0.00	857	9	0.00
82300	Assay cadmium	378	131,528	0.00	470	4,819	0.00
82306	Assay of vitamin D	267	393,300	0.01	360	10,644	0.00
82307	Assay of vitamin D	240	538,564	0.02	344	12,141	0.00
82308	Assay of calcitonin	389	122,922	0.00	495	3,586	0.00
82310	Assay calcium	171	1,462,906	0.05	119	236,877	0.08
82330	Assay calcium	101	4,036,372	0.14	123	218,029	0.07
82331	Calcium infusion test	771	1,702	0.00	714	259	0.00
82340	Assay calcium in urine	315	253,913	0.01	256	31,750	0.01
82355	Calculus (stone) analysis	519	39,547	0.00	523	2,666	0.00
82360	Calculus (stone) assay	431	88,669	0.00	447	6,248	0.00
82365	Calculus (stone) assay	458	69,676	0.00	482	4,264	0.00
82370	X-ray assay, calculus (stone	394	119,563	0.00	390	8,560	0.00
82374	Assay blood carbon dioxide	330	220,679	0.01	243	43,460	0.01
82375	Assay blood carbon monoxide	304	277,880	0.01	279	22,974	0.01
82376	Test for carbon monoxide	557	29,602	0.00	471	4,805	0.00
82378	Carcinoembryonic antigen	25	25,825,469	0.87	54	1,072,170	0.34
82380	Assay carotene	327	228,039	0.01	309	17,575	0.01
82382	Assay urine catecholamines	442	77,943	0.00	494	3,599	0.00
82383	Assay blood catecholamines	556	29,685	0.00	610	993	0.00
82384	Assay three catecholamines	308	267,442	0.01	388	8,644	0.00
82387	Cathepsin-D	555	29,690	0.00	593	1,250	0.00
82390	Assay ceruloplasmin	376	133,999	0.00	376	9,588	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82397	Chemiluminescent assay	253	444,154	0.01	283	22,439	0.01
82415	Assay chloramphenicol	650	8,192	0.00	642	660	0.00
82435	Assay blood chloride	401	111,218	0.00	285	21,504	0.01
82436	Assay urine chloride	572	22,835	0.00	465	4,938	0.00
82438	Assay other fluid chlorides	769	1,731	0.00	713	262	0.00
82441	Test for chlorohydrocarbons	601	16,708	0.00	541	2,205	0.00
82465	Assay serum cholesterol	92	4,610,226	0.16	66	846,852	0.27
82480	Assay serum cholinesterase	594	17,949	0.00	567	1,704	0.00
82482	Assay rbc cholinesterase	652	8,073	0.00	625	819	0.00
82485	Assay chondroitin sulfate	786	1,335	0.00	774	102	0.00
82486	Gas/liquid chromatography	264	401,994	0.01	311	17,399	0.01
82487	Paper chromatography	852	208	0.00	848	16	0.00
82488	Paper chromatography	732	2,914	0.00	709	281	0.00
82489	Thin layer chromatography	342	185,583	0.01	415	7,467	0.00
82491	Chromotography, quantitative	192	1,094,415	0.04	230	47,941	0.02
82495	Assay chromium	454	70,875	0.00	506	3,151	0.00
82507	Assay citrate	363	155,541	0.01	474	4,680	0.00
82520	Assay for cocaine	457	69,919	0.00	444	6,346	0.00
82525	Assay copper	347	182,271	0.01	345	11,884	0.00
82528	Assay corticosterone	752	2,222	0.00	751	136	0.00
82530	Cortisol, free	407	105,254	0.00	472	4,767	0.00
82533	Total cortisol	164	1,684,916	0.06	187	79,578	0.03
82536	Cortisol test after ACTH	711	3,952	0.00	686	372	0.00
82539	Cortisol after dexamethasone	795	1,131	0.00	766	115	0.00
82540	Assay creatine	297	291,633	0.01	234	45,687	0.01
82550	Assay CK (CPK)	112	3,410,012	0.12	97	394,279	0.13
82552	Assay CPK in blood	195	1,028,129	0.03	214	58,582	0.02
82553	Creatine, MB fraction	318	248,697	0.01	294	20,009	0.01
82554	Creatine, isoforms	683	5,348	0.00	652	558	0.00
82565	Assay creatinine	120	3,107,318	0.10	90	472,029	0.15

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82570	Assay urine creatinine	235	575,533	0.02	185	86,513	0.03
82575	Creatinine clearance test	153	1,852,338	0.06	154	143,637	0.05
82585	Assay cryofibrinogen	596	16,880	0.00	575	1,492	0.00
82595	Assay cryoglobulin	422	96,758	0.00	350	11,590	0.00
82600	Assay cyanide	709	4,025	0.00	722	229	0.00
82607	Vitamin B-12	27	24,866,061	0.84	46	1,203,637	0.38
82608	B-12 binding capacity	400	111,271	0.00	450	5,994	0.00
82615	Test for urine cystines	621	12,211	0.00	596	1,176	0.00
82626	Dehydroepiandrosterone	307	268,679	0.01	399	8,150	0.00
82627	Dehydroepiandrosterone	288	322,954	0.01	362	10,625	0.00
82633	Desoxycorticosterone	747	2,370	0.00	794	69	0.00
82634	Deoxycortisol	656	7,827	0.00	711	276	0.00
82638	Assay dibucaine number	809	813	0.00	806	48	0.00
82646	Assay of dihydrocodeinone	722	3,398	0.00	755	129	0.00
82649	Assay of dihydromorphinone	657	7,755	0.00	720	230	0.00
82651	Dihydrotestosterone assay	498	45,058	0.00	580	1,395	0.00
82652	Assay, dihydroxyvitamin D	211	838,738	0.03	304	18,189	0.01
82654	Assay of dimethadione	796	1,108	0.00	795	67	0.00
82664	Electrophoretic test	281	332,300	0.01	419	7,347	0.00
82666	Epiandrosterone assay	832	420	0.00	826	29	0.00
82668	Erythropoietin	259	423,783	0.01	301	18,657	0.01
82670	Estradiol	193	1,048,407	0.04	264	30,180	0.01
82671	Estrogens assay	488	51,807	0.00	571	1,585	0.00
82672	Estrogen assay	300	286,545	0.01	356	11,033	0.00
82677	Estriol	553	29,716	0.00	588	1,355	0.00
82679	Estrone	565	25,705	0.00	613	945	0.00
82690	Ethchlorvynol	756	2,126	0.00	760	125	0.00
82693	Ethylene glycol	845	273	0.00	849	15	0.00
82696	Etiocholanolone	772	1,669	0.00	799	61	0.00
82705	Fats/lipids, feces, qualitative	495	46,477	0.00	424	7,245	0.00
82710	Fats/lipids, feces, quantitative	373	138,484	0.00	427	7,062	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82715	Fecal fat assay	459	69,128	0.00	511	2,923	0.00
82725	Assay blood fatty acids	396	116,258	0.00	402	8,016	0.00
82728	Assay ferritin	15	40,075,337	1.35	29	2,365,578	0.76
82735	Assay fluoride	575	22,068	0.00	621	844	0.00
82742	Assay of flurazepam	674	6,020	0.00	724	221	0.00
82746	Blood folic acid serum	41	16,472,511	0.56	67	834,832	0.27
82747	Folic acid, RBC	194	1,041,594	0.04	229	48,858	0.02
82757	Assay semen fructose	653	8,040	0.00	661	524	0.00
82759	RBC galactokinase assay	858	171	0.00	862	7	0.00
82760	Assay galactose	789	1,302	0.00	779	97	0.00
82775	Assay galactose transferase	763	1,947	0.00	788	78	0.00
82776	Galactose transferase test	862	122	0.00	851	15	0.00
82784	Assay gammaglobulin IgM	86	5,457,163	0.18	93	452,722	0.14
82785	Assay, gammaglobulin IgE	145	2,038,034	0.07	175	100,957	0.03
82787	IgG1, 2, 3 and 4	340	204,711	0.01	383	8,993	0.00
82792	Blood oxygen saturation	302	285,365	0.01	247	37,692	0.01
82800	Blood pH	433	84,330	0.00	377	9,347	0.00
82801	Blood gases: pCO2	618	13,034	0.00	539	2,247	0.00
82802	Blood gases: pH & pCO2	600	16,752	0.00	590	1,330	0.00
82803	Blood gases: pH, pO2 & pCO2	118	3,162,259	0.11	158	135,646	0.04
82804	Blood gases: electrode pO2	603	16,018	0.00	565	1,751	0.00
82805	Blood gases W/02 saturation	196	1,012,767	0.03	252	32,506	0.01
82810	Blood gases, O2 sat only	329	226,134	0.01	289	20,788	0.01
82812	Blood gases: manometry pO2	860	139	0.00	811	46	0.00
82817	Blood gases: pH, pCO2	691	4,787	0.00	699	314	0.00
82820	Hemoglobin-oxygen affinity	481	58,527	0.00	458	5,434	0.00
82926	Assay gastric acid	787	1,327	0.00	734	191	0.00
82928	Assay gastric acid	755	2,166	0.00	696	325	0.00
82938	Gastrin test	729	3,088	0.00	753	135	0.00
82941	Assay of gastrin	242	529,019	0.02	275	23,549	0.01
82943	Assay of glucagon	525	37,245	0.00	530	2,414	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
82946	Glucagon tolerance test	514	40,821	0.00	513	2,892	0.00
82947	Assay quantitative, glucose	18	36,663,590	1.24	9	6,849,241	2.19
82948	Reagent strip/blood glucose	70	7,567,565	0.26	34	1,816,803	0.58
82950	Glucose test	209	867,236	0.03	159	134,391	0.04
82951	Glucose tolerance test (GTT)	199	968,418	0.03	203	64,000	0.02
82952	GTT-added samples	295	295,228	0.01	209	60,866	0.02
82953	Glucose-tolbutamide test	643	9,479	0.00	581	1,391	0.00
82955	Assay G6PD enzyme	424	93,668	0.00	397	8,240	0.00
82960	Test for G6PD enzyme	460	68,441	0.00	392	8,500	0.00
82961	IV glucose tolerance test	718	3,654	0.00	631	749	0.00
82962	Glucose blood test	125	2,820,716	0.10	78	672,910	0.22
82963	Glucosidase assay	754	2,200	0.00	739	171	0.00
82965	Assay GDH enzyme	616	13,075	0.00	568	1,694	0.00
82975	Assay glutamine	701	4,353	0.00	707	290	0.00
82977	Assay of GGT	69	7,584,075	0.26	62	901,600	0.29
82978	Glutathione assay	570	24,049	0.00	570	1,662	0.00
82979	Assay RBC glutathione enzyme	499	45,054	0.00	468	4,913	0.00
82980	Assay of glutethimide	377	133,154	0.00	434	6,907	0.00
82985	Glycated protein	33	19,236,965	0.65	42	1,264,162	0.40
83001	Gonadotropin (FSH)	152	1,879,804	0.06	189	75,469	0.02
83002	Gonadotropin (LH)	175	1,389,119	0.05	219	55,107	0.02
83003	Assay growth hormone (HGH)	444	75,889	0.00	493	3,671	0.00
83004	Growth hormone after GTT	875	49	0.00	878	2	0.00
83008	Assay guanosine	850	223	0.00	837	23	0.00
83010	Quant assay haptoglobin	238	550,314	0.02	248	36,192	0.01
83012	Assay haptoglobins	828	452	0.00	833	24	0.00
83015	Heavy metal screen	371	140,701	0.00	430	6,942	0.00
83018	Quantitative screen, metals	233	596,912	0.02	286	21,461	0.01
83020	Assay hemoglobin	160	1,732,257	0.06	172	108,310	0.03

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

HCPCS	Procedure Name	Allowed Charges Ranking	Allowed Charges $	Allowed Charges %	Volume Ranking	Volume Number	Volume %
83026	Hemoglobin, copper sulfate	445	75,771	0.00	280	22,856	0.01
83030	Fetal hemoglobin assay	637	9,949	0.00	606	1,010	0.00
83033	Fetal fecal hemoglobin assay	790	1,295	0.00	731	202	0.00
83036	Glycated hemoglobin test	17	38,471,090	1.30	24	2,959,179	0.95
83045	Blood methemoglobin test	611	14,475	0.00	492	3,675	0.00
83050	Blood methemoglobin assay	351	171,667	0.01	273	24,491	0.01
83051	Assay plasma hemoglobin	322	236,043	0.01	267	28,712	0.01
83055	Blood sulfhemoglobin test	744	2,445	0.00	674	447	0.00
83060	Blood sulfhemoglobin assay	712	3,922	0.00	684	381	0.00
83065	Hemoglobin heat assay	748	2,362	0.00	706	291	0.00
83068	Hemoglobin stability screen	608	15,329	0.00	524	2,626	0.00
83069	Assay urine hemoglobin	690	4,937	0.00	582	1,390	0.00
83070	Qualt assay hemosiderin	700	4,390	0.00	629	766	0.00
83071	Quant assay of hemosiderin	750	2,284	0.00	721	230	0.00
83088	Assay histamine	543	31,710	0.00	623	828	0.00
83150	Assay for HVA	615	13,381	0.00	645	638	0.00
83491	Assay of corticosteroids	563	27,096	0.00	595	1,210	0.00
83497	Assay 5-HIAA	368	146,226	0.00	384	8,889	0.00
83498	Assay of progesterone	554	29,712	0.00	607	1,008	0.00
83499	Assay of progesterone	815	718	0.00	824	30	0.00
83500	Assay free hydroxyproline	477	60,072	0.00	542	2,191	0.00
83505	Assay total hydroxyproline	420	98,214	0.00	502	3,253	0.00
83518	Immunoassay, dipstick	291	311,447	0.01	274	24,072	0.01
83519	Immunoassay nonantibody	335	213,562	0.01	325	14,737	0.00
83520	Immunoassay, RIA	168	1,571,520	0.05	173	107,684	0.03
83525	Assay of insulin	344	184,162	0.01	340	12,769	0.00
83526	Insulin tolerance test	734	2,766	0.00	638	704	0.00
83527	Assay of insulin	765	1,884	0.00	783	92	0.00
83528	Assay intrinsic factor	723	3,373	0.00	744	155	0.00

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
83540	Assay iron	19	35,747,533	1.21	15	4,255,416	1.36
83550	Iron binding test	13	46,626,240	1.57	16	4,205,972	1.34
83570	Assay IDH enzyme	749	2,301	0.00	717	243	0.00
83582	Assay ketogenic steroids	647	8,497	0.00	667	495	0.00
83586	Assay 17-(17-KS)ketosteroids	592	18,561	0.00	600	1,123	0.00
83593	Fractionation ketosteroids	693	4,677	0.00	743	155	0.00
83605	Lactic acid assay	523	37,769	0.00	509	2,982	0.00
83615	Lactate (LD) (LDH) enzyme	277	338,741	0.01	237	44,915	0.01
83625	Assay LDH enzymes	219	733,111	0.02	241	43,933	0.01
83632	Placental lactogen	824	527	0.00	839	22	0.00
83633	Test urine for lactose	841	334	0.00	808	48	0.00
83634	Assay urine for lactose	820	611	0.00	818	40	0.00
83655	Assay for lead	284	326,211	0.01	277	23,507	0.01
83661	Assay L/S ratio	738	2,610	0.00	782	92	0.00
83662	L/S ratio, foam stability	869	66	0.00	873	3	0.00
83670	Assay LAP enzyme	668	6,620	0.00	646	634	0.00
83690	Assay lipase	180	1,284,114	0.04	156	142,955	0.05
83715	Assay blood lipoproteins	139	2,230,345	0.08	143	161,024	0.05
83717	Assay blood lipoproteins	200	964,119	0.03	261	30,955	0.01
83718	Blood lipoprotein assay	6	109,648,793	3.70	6	10,171,411	3.25
83719	Blood lipoprotein assay	85	5,569,489	0.19	96	396,442	0.13
83721	Blood lipoprotein assay	48	12,713,730	0.43	57	1,044,212	0.33
83727	LRH hormone assay	633	10,434	0.00	658	539	0.00
83735	Assay magnesium	26	25,555,961	0.86	26	2,909,170	0.93
83775	Assay of md enzyme	782	1,401	0.00	746	151	0.00
83785	Assay of manganese	289	318,638	0.01	313	17,034	0.01
83790	Mannitol clearance test	803	916	0.00	776	101	0.00
83805	Assay of meprobamate	739	2,603	0.00	761	123	0.00
83825	Assay mercury	354	166,556	0.01	391	8,501	0.00
83835	Assay metanephrines	313	255,481	0.01	347	11,692	0.00
83840	Assay methadone	406	106,954	0.00	341	12,355	0.00
83857	Assay methemalbumin	817	660	0.00	809	47	0.00
83858	Assay methsuximide	661	7,128	0.00	683	386	0.00

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
83864	Mucopolysaccharides	814	728	0.00	827	28	0.00
83866	Mucopolysaccharides screen	835	386	0.00	845	18	0.00
83872	Assay synovial fluid mucin	413	103,592	0.00	326	14,656	0.00
83873	Assay, CSF protein	638	9,844	0.00	672	459	0.00
83874	Myoglobin	578	21,569	0.00	583	1,384	0.00
83883	Nephelometry, not specified	263	407,084	0.01	284	21,937	0.01
83885	Assay for nickel	609	14,714	0.00	636	721	0.00
83887	Assay nicotine	730	3,062	0.00	756	127	0.00
83890	Molecular diagnostics	536	34,401	0.00	387	8,796	0.00
83892	Molecular diagnostics	513	40,851	0.00	348	11,688	0.00
83894	Molecular diagnostics	510	41,512	0.00	295	19,828	0.01
83896	Molecular diagnostics	568	25,428	0.00	405	7,862	0.00
83898	Molecular diagnostics	349	176,948	0.01	394	8,409	0.00
83912	Genetic examination	436	82,129	0.00	374	9,633	0.00
83915	Assay nucleotidase	273	352,832	0.01	278	23,044	0.01
83916	Oligoclonal bands	546	30,903	0.00	592	1,262	0.00
83918	Assay organic acids	412	104,132	0.00	460	5,222	0.00
83925	Opiates	390	121,310	0.00	445	6,261	0.00
83930	Assay blood osmolality	217	744,473	0.03	181	88,537	0.03
83935	Assay urine osmolality	465	64,400	0.00	414	7,510	0.00
83937	Assay for osteocalcin	266	395,887	0.01	323	14,919	0.00
83945	Assay oxalate	410	104,747	0.00	448	6,227	0.00
83970	Assay of parathormone	29	24,090,956	0.81	95	432,471	0.14
83986	Assay body fluid acidity	522	37,944	0.00	373	9,813	0.00
83992	Assay for phencyclidine	446	74,293	0.00	466	4,937	0.00
84022	Assay of phenothiazine	309	266,195	0.01	337	13,069	0.00
84030	Assay blood PKU	731	2,998	0.00	670	475	0.00
84035	Assay phenylketones	849	244	0.00	817	41	0.00
84060	Assay acid phosphatase	234	594,048	0.02	210	60,631	0.02
84061	Phosphatase, forensic exam	863	118	0.00	853	13	0.00
84066	Assay prostate phosphatase	65	8,078,887	0.27	81	631,090	0.20

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
84075	Assay alkaline phosphatase	248	471,305	0.02	193	70,092	0.02
84078	Assay alkaline phosphatase	567	25,485	0.00	525	2,611	0.00
84080	Assay alkaline phosphatases	272	352,883	0.01	288	20,841	0.01
84081	Amniotic fluid enzyme test	788	1,308	0.00	800	59	0.00
84085	Assay RBC PG6D enzyme	853	208	0.00	838	23	0.00
84087	Assay phosphohexose enzymes	776	1,570	0.00	747	150	0.00
84100	Assay phosphorus	279	334,287	0.01	204	63,345	0.02
84105	Assay urine phosphorus	494	47,855	0.00	426	7,131	0.00
84106	Test for porphobilinogen	793	1,167	0.00	727	213	0.00
84110	Assay porphobilinogen	676	5,734	0.00	663	517	0.00
84119	Test urine for porphyrins	692	4,679	0.00	671	462	0.00
84120	Assay urine porphyrins	526	37,179	0.00	549	2,124	0.00
84126	Assay feces porphyrins	314	254,725	0.01	418	7,379	0.00
84127	Porphyrins, feces	864	114	0.00	859	8	0.00
84132	Assay serum potassium	56	10,176,191	0.34	38	1,645,480	0.53
84133	Assay urine potassium	475	60,244	0.00	371	10,070	0.00
84134	Prealbumin	100	4,054,665	0.14	126	199,336	0.06
84135	Assay pregnanediol	646	8,863	0.00	659	536	0.00
84138	Assay pregnanetriol	770	1,709	0.00	791	76	0.00
84140	Assay for pregnenolone	808	836	0.00	819	38	0.00
84143	Assay/17-hydroxypregnenolone	708	4,029	0.00	770	112	0.00
84144	Assay progesterone	343	184,735	0.01	428	7,035	0.00
84146	Assay for prolactin	155	1,809,230	0.06	195	68,685	0.02
84150	Assay of prostaglandin	473	60,579	0.00	551	2,083	0.00
84153	Prostate specific antigen	8	105,377,003	3.56	13	4,768,813	1.52
84155	Assay protein	204	911,190	0.03	127	191,485	0.06
84160	Assay serum protein	449	72,619	0.00	366	10,220	0.00
84165	Assay serum proteins	67	7,803,674	0.26	88	528,166	0.17
84175	Assay body proteins	484	54,929	0.00	333	13,444	0.00
84181	Western blot test	515	40,810	0.00	555	1,994	0.00
84182	Protein, western blot test	471	61,656	0.00	501	3,263	0.00

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
84201	Assay protirelin	612	14,220	0.00	579	1,434	0.00
84202	Assay RBC protoporphyrin	282	330,637	0.01	308	17,638	0.01
84203	Test RBC protoporphyrin	801	924	0.00	787	79	0.00
84206	Assay of proinsulin	721	3,416	0.00	726	213	0.00
84207	Assay vitamin B-6	278	335,716	0.01	364	10,445	0.00
84210	Assay pyruvate	705	4,173	0.00	685	373	0.00
84220	Assay pyruvate kinase	783	1,399	0.00	758	127	0.00
84228	Assay quinine	696	4,504	0.00	715	244	0.00
84233	Assay estrogen	250	469,912	0.02	439	6,694	0.00
84234	Assay progesterone	258	428,721	0.01	446	6,251	0.00
84235	Assay endocrine hormone	520	39,148	0.00	632	747	0.00
84238	Assay non-endocrine receptor	241	534,709	0.02	355	11,042	0.00
84244	Assay of renin	280	332,851	0.01	351	11,397	0.00
84246	Renin furosemide test	742	2,546	0.00	773	109	0.00
84252	Assay vitamin B-2	418	99,253	0.00	479	4,395	0.00
84255	Assay selenium	245	507,862	0.02	324	14,885	0.00
84260	Assay serotonin	451	71,979	0.00	535	2,387	0.00
84270	Sex hormone globulin (SHBG)	409	105,160	0.00	490	3,750	0.00
84275	Assay sialic acid	334	213,629	0.01	227	50,072	0.02
84285	Assay silica	632	10,814	0.00	616	905	0.00
84295	Assay serum sodium	202	942,311	0.03	144	158,378	0.05
84300	Assay urine sodium	402	110,793	0.00	312	17,399	0.01
84305	Somatomedin	466	64,356	0.00	521	2,667	0.00
84307	Somatostatin	827	462	0.00	842	20	0.00
84311	Spectrophotometry	516	40,290	0.00	467	4,914	0.00
84315	Body fluid specific gravity	728	3,173	0.00	612	950	0.00
84375	Chromatogram assay, sugars	374	137,063	0.00	433	6,929	0.00
84392	Assay urine sulfate	736	2,719	0.00	678	423	0.00
84402	Testosterone	228	640,322	0.02	299	19,191	0.01
84403	Assay total testosterone	87	5,276,739	0.18	145	154,330	0.05
84425	Assay vitamin B-1	311	259,083	0.01	339	12,811	0.00
84430	Assay thiocyanate	640	9,741	0.00	628	773	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
84432	Thyroglobulin	336	207,566	0.01	363	10,551	0.00
84436	Assay, total thyroxine	20	34,712,217	1.17	18	3,840,047	1.23
84437	Assay neonatal thyroxine	662	7,109	0.00	591	1,263	0.00
84439	Assay, free thyroxine	53	11,282,620	0.38	61	923,982	0.30
84442	Thyroid activity (TBG) assay	177	1,353,554	0.05	199	66,374	0.02
84443	Assay thyroid stim hormone	5	112,964,524	3.81	11	5,065,988	1.62
84444	RIA thyrotropin factor	818	654	0.00	812	45	0.00
84445	Thyroid immunoglobulins TSI	383	128,456	0.00	532	2,406	0.00
84446	Assay vitamin E	292	305,778	0.01	316	16,128	0.01
84449	Assay for transcortin	798	1,031	0.00	814	42	0.00
84450	Transferase (AST) (SGOT)	161	1,725,607	0.06	116	248,586	0.08
84460	Alanine amino (ALT) (SGPT)	113	3,314,563	0.11	91	467,627	0.15
84466	Transferrin	98	4,166,262	0.14	115	250,040	0.08
84478	Assay triglycerides	71	7,423,853	0.25	58	1,033,714	0.33
84479	Assay triiodothyronine (T-3)	58	9,960,477	0.34	49	1,171,908	0.37
84480	Total assay, TT-3	49	11,995,454	0.41	80	637,087	0.20
84481	Free assay (FT-3)	186	1,158,052	0.04	218	56,005	0.02
84482	T3 reverse	581	20,892	0.00	601	1,082	0.00
84485	Assay duodenal fluid trypsin	800	965	0.00	762	123	0.00
84488	Test feces for trypsin	802	923	0.00	777	99	0.00
84490	Assay feces for trypsin	559	28,755	0.00	517	2,776	0.00
84510	Assay tyrosine	745	2,433	0.00	700	313	0.00
84520	Assay urea nitrogen	99	4,114,298	0.14	69	789,125	0.25
84525	Urea nitrogen semi-quant	588	19,318	0.00	488	3,889	0.00
84540	Assay urine urea-N	372	140,435	0.00	281	22,552	0.01
84545	Urea-N clearance test	463	65,429	0.00	400	8,105	0.00
84550	Assay blood uric acid	182	1,255,887	0.04	125	211,685	0.07
84555	Assay uric acid	469	62,178	0.00	317	15,862	0.01
84560	Assay urine uric acid	398	113,698	0.00	305	18,163	0.01
84577	Assay feces urobilinogen	797	1,086	0.00	796	67	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

HCPCS	Procedure Name	Allowed Charges			Volume		
		Ranking	$	%	Ranking	Number	%
84578	Test urine urobilinogen	470	62,131	0.00	330	13,826	0.00
84580	Assay urine urobilinogen	660	7,236	0.00	622	843	0.00
84583	Assay urine urobilinogen	679	5,478	0.00	617	905	0.00
84585	Assay urine VMA	339	204,838	0.01	370	10,074	0.00
84586	VIP assay	569	24,864	0.00	675	439	0.00
84588	Assay vasopressin	577	21,692	0.00	668	481	0.00
84589	Assay fluid viscosity	620	12,442	0.00	599	1,124	0.00
84590	Assay vitamin-A	320	245,045	0.01	320	15,464	0.00
84597	Assay vitamin-K	751	2,251	0.00	725	217	0.00
84600	Assay for volatiles	496	46,064	0.00	534	2,388	0.00
84620	Xylose tolerance test	504	43,098	0.00	514	2,884	0.00
84630	Assay zinc	218	734,665	0.02	226	50,311	0.02
84681	Assay C-peptide	352	169,373	0.01	432	6,937	0.00
84702	Chorionic gonadotropin test	328	226,945	0.01	318	15,755	0.01
84703	Chorionic gonadotropin assay	326	230,743	0.01	270	25,690	0.01
84830	Ovulation tests	854	204	0.00	841	21	0.00
84999	Clinical chemistry test	243	527,559	0.02	233	46,193	0.01
85002	Bleeding time test	290	311,908	0.01	222	52,970	0.02
85007	Differential WBC count	91	4,752,498	0.16	55	1,065,941	0.34
85008	Nondifferential WBC count	215	769,644	0.03	140	164,213	0.05
85009	Differential WBC count	293	305,571	0.01	201	65,705	0.02
85013	Hematocrit	244	521,399	0.02	138	165,262	0.05
85014	Hematocrit	130	2,624,153	0.09	68	829,184	0.27
85018	Hemoglobin	109	3,495,714	0.12	53	1,112,224	0.36
85021	Automated hemogram	57	9,996,461	0.34	41	1,320,168	0.42
85022	Automated hemogram	73	7,357,899	0.25	60	978,932	0.31
85023	Automated hemogram	21	34,622,548	1.17	23	3,015,999	0.96
85024	Automated hemogram	7	105,442,911	3.56	7	9,392,220	3.00
85025	Automated hemogram	2	164,955,013	5.57	4	15,775,378	5.04
85027	Automated hemogram	40	16,497,447	0.56	33	1,905,394	0.61
85029	Automated hemogram	43	14,979,486	0.51	22	3,030,490	0.97
85030	Automated hemogram	94	4,345,279	0.15	63	893,713	0.29

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	**Procedure Name**	**Ranking**	**$**	**%**	**Ranking**	**Number**	**%**
85031	Manual hemogram, complete cbc	90	4,833,730	0.16	84	604,499	0.19
85041	Red blood cell (RBC) count	474	60,469	0.00	322	15,130	0.00
85044	Reticulocyte count	123	2,976,540	0.10	89	506,106	0.16
85045	Reticulocyte count	105	3,598,346	0.12	79	640,022	0.20
85048	White blood cell (WBC) count	183	1,206,240	0.04	102	351,508	0.11
85060	Blood smear interpretation	104	3,764,371	0.13	117	242,866	0.08
85095	Bone marrow aspiration	64	8,125,341	0.27	146	154,281	0.05
85097	Bone marrow interpretation	75	6,958,279	0.23	134	170,988	0.05
85102	Bone marrow biopsy	62	8,223,069	0.28	157	142,199	0.05
85130	Chromogenic substrate assay	648	8,212	0.00	657	541	0.00
85170	Blood clot retraction	659	7,280	0.00	578	1,469	0.00
85175	Blood clot lysis time	813	787	0.00	759	127	0.00
85210	Blood clot factor II test	416	99,926	0.00	404	7,959	0.00
85220	Blood clot factor V test	665	6,905	0.00	702	306	0.00
85230	Blood clot factor VII test	607	15,447	0.00	635	724	0.00
85240	Blood clot factor VIII test	539	33,252	0.00	545	2,165	0.00
85244	Blood clot factor VIII test	630	10,834	0.00	669	478	0.00
85245	Blood clot factor VIII test	613	13,979	0.00	648	591	0.00
85246	Blood clot factor VIII test	624	11,406	0.00	662	522	0.00
85247	Blood clot factor VIII test	623	11,551	0.00	679	413	0.00
85250	Blood clot factor IX test	631	10,817	0.00	665	497	0.00
85260	Blood clot factor X test	667	6,683	0.00	701	307	0.00
85270	Blood clot factor XI test	663	7,061	0.00	698	323	0.00
85280	Blood clot factor XII test	703	4,196	0.00	733	191	0.00
85290	Blood clot factor XIII test	725	3,295	0.00	745	152	0.00
85291	Blood clot factor XIII test	761	2,019	0.00	735	187	0.00
85292	Blood clot factor assay	865	84	0.00	872	3	0.00
85293	Blood clot factor assay	816	703	0.00	831	25	0.00
85300	Antithrombin III test	404	109,148	0.00	380	9,226	0.00
85301	Antithrombin III test	614	13,759	0.00	605	1,012	0.00

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
85302	Blood clot inhibitor antigen	547	30,739	0.00	559	1,912	0.00
85303	Blood clot inhibitor test	619	12,815	0.00	637	706	0.00
85305	Blood clot inhibitor assay	530	35,845	0.00	538	2,277	0.00
85306	Blood clot inhibitor test	597	16,827	0.00	620	862	0.00
85335	Factor inhibitor test	571	23,994	0.00	543	2,183	0.00
85337	Thrombomodulin	781	1,425	0.00	771	110	0.00
85345	Coagulation time	552	29,892	0.00	463	5,165	0.00
85347	Coagulation time	777	1,547	0.00	710	278	0.00
85348	Coagulation time	727	3,184	0.00	640	694	0.00
85360	Euglobulin lysis	564	26,438	0.00	505	3,204	0.00
85362	Fibrin degradation products	598	16,801	0.00	558	1,914	0.00
85366	Fibrinogen test	716	3,662	0.00	697	324	0.00
85370	Fibrinogen test	595	17,054	0.00	594	1,242	0.00
85378	Fibrin degradation	651	8,128	0.00	619	885	0.00
85379	Fibrin degradation	666	6,804	0.00	656	548	0.00
85384	Fibrinogen	321	241,215	0.01	291	20,733	0.01
85385	Fibrinogen	434	83,786	0.00	422	7,270	0.00
85390	Fibrinolysins screen	379	131,166	0.00	393	8,491	0.00
85400	Fibrinolytic plasmin	876	35	0.00	868	5	0.00
85410	Fibrinolytic antiplasmin	768	1,819	0.00	730	204	0.00
85415	Fibrinolytic plasminogen	767	1,824	0.00	740	169	0.00
85420	Fibrinolytic plasminogen	583	20,251	0.00	540	2,238	0.00
85421	Fibrinolytic plasminogen	658	7,372	0.00	630	763	0.00
85441	Heinz bodies; direct	720	3,424	0.00	650	565	0.00
85445	Heinz bodies; induced	834	387	0.00	805	49	0.00
85460	Hemoglobin, fetal	741	2,561	0.00	716	244	0.00
85475	Hemolysin	699	4,417	0.00	680	412	0.00
85520	Heparin assay	602	16,342	0.00	614	939	0.00
85525	Heparin	759	2,036	0.00	741	165	0.00
85530	Heparin-protamine tolerance	472	60,983	0.00	507	3,144	0.00
85535	Iron stain, blood cells	432	87,175	0.00	359	10,769	0.00
85540	WBC alkaline phosphatase	403	109,332	0.00	372	9,849	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
85547	RBC mechanical fragility	753	2,208	0.00	704	295	0.00
85549	Muramidase	518	39,920	0.00	561	1,851	0.00
85555	RBC osmotic fragility	805	888	0.00	780	97	0.00
85557	RBC osmotic fragility	677	5,733	0.00	688	363	0.00
85575	Blood platelet adhesiveness	511	40,979	0.00	440	6,630	0.00
85576	Blood platelet aggregation	261	415,538	0.01	258	31,498	0.01
85585	Blood platelet estimation	286	325,662	0.01	192	72,507	0.02
85590	Platelet manual count	162	1,720,736	0.06	111	287,274	0.09
85595	Platelet count, automated	82	6,260,454	0.21	59	1,000,571	0.32
85597	Platelet neutralization	641	9,669	0.00	664	513	0.00
85610	Prothrombin time	11	62,422,306	2.11	5	11,235,609	3.59
85611	Prothrombin test	357	159,436	0.01	266	28,904	0.01
85612	Viper venom prothrombin time	486	52,246	0.00	420	7,319	0.00
85613	Russell viper venom, diluted	589	18,936	0.00	562	1,790	0.00
85635	Reptilase test	628	11,146	0.00	618	892	0.00
85651	RBC sed rate, nonauto	28	24,619,270	0.83	12	5,034,910	1.61
85660	RBC sickle cell test	483	58,203	0.00	368	10,167	0.00
85670	Thrombin time, plasma	485	53,210	0.00	435	6,896	0.00
85675	Thrombin time, titer	856	198	0.00	828	28	0.00
85705	Thromboplastin inhibition	680	5,473	0.00	654	552	0.00
85720	Thromboplastin generation	859	159	0.00	742	164	0.00
85730	Thromboplastin time, partial	59	9,649,247	0.33	48	1,173,692	0.38
85732	Thromboplastin time, partial	415	103,222	0.00	352	11,370	0.00
85810	Blood viscosity examination	360	156,416	0.01	369	10,138	0.00
85820	Serum viscosity examination	654	7,865	0.00	602	1,074	0.00
85999	Hematology procedure	380	130,908	0.00	298	19,280	0.01
86000	Agglutinins; febrile	414	103,532	0.00	338	12,848	0.00
86003	Allergen specific IgE	42	15,599,347	0.53	103	333,931	0.11
86005	Allergen specific IgE	102	3,836,873	0.13	128	191,186	0.06

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

HCPCS	Procedure Name	Allowed Charges			Volume		
		Ranking	$	%	Ranking	Number	%
86021	WBC antibody identification	385	127,289	0.00	408	7,758	0.00
86022	Platelet antibodies	386	125,056	0.00	438	6,723	0.00
86023	Immunoglobulin assay	462	65,966	0.00	476	4,634	0.00
86038	Antinuclear antibodies	88	5,044,703	0.17	109	305,937	0.10
86039	Antinuclear antibodies (ANA)	197	1,009,235	0.03	196	68,367	0.02
86060	Antistreptolysin O titer	212	825,577	0.03	180	89,299	0.03
86063	Antistreptolysin O screen	249	470,448	0.02	206	62,617	0.02
86077	Physician blood bank service	256	431,182	0.01	302	18,641	0.01
86078	Physician blood bank service	287	325,662	0.01	378	9,257	0.00
86079	Physician blood bank service	549	30,595	0.00	586	1,361	0.00
86140	C-reactive protein	137	2,235,122	0.08	105	324,583	0.10
86147	Cardiolipin antibody	223	697,580	0.02	260	31,292	0.01
86155	Chemotaxis assay	791	1,264	0.00	781	94	0.00
86156	Cold agglutinin screen	443	76,330	0.00	382	9,112	0.00
86157	Cold agglutinin, titer	438	80,888	0.00	406	7,826	0.00
86160	Complement, antigen	146	2,018,549	0.07	163	124,435	0.04
86161	Complement/function activity	338	205,578	0.01	343	12,166	0.00
86162	Complement, total (CH50)	257	428,975	0.01	315	16,421	0.01
86171	Complement fixation, each	393	120,520	0.00	361	10,627	0.00
86185	Counterimmunoelectrophoresis	780	1,464	0.00	754	134	0.00
86215	Deoxyribonuclease, antibody	558	29,462	0.00	563	1,778	0.00
86225	DNA antibody	154	1,836,645	0.06	177	100,613	0.03
86226	DNA antibody, single strand	426	91,809	0.00	454	5,899	0.00
86235	Nuclear antigen antibody	83	6,114,035	0.21	112	283,276	0.09
86243	Fc receptor	773	1,668	0.00	789	78	0.00
86255	Fluorescent antibody; screen	89	4,902,545	0.17	108	305,953	0.10

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
86256	Fluorescent antibody; titer	121	3,093,624	0.10	124	216,245	0.07
86277	Growth hormone antibody	673	6,343	0.00	703	304	0.00
86280	Hemagglutination inhibition	480	59,201	0.00	455	5,797	0.00
86287	Hepatitis B (HBsAg)	39	16,929,951	0.57	47	1,199,320	0.38
86289	Hepatitis BC antibody test	163	1,718,346	0.06	167	115,264	0.04
86290	Hepatitis BC antibody test	126	2,788,986	0.09	135	169,726	0.05
86291	Hepatitis BS antibody test	78	6,666,105	0.23	92	462,125	0.15
86293	Hepatitis Be antibody test	246	497,551	0.02	249	35,665	0.01
86295	Hepatitis Be antibody test	254	441,604	0.01	254	31,952	0.01
86296	Hepatitis A antibody test	198	999,341	0.03	198	67,498	0.02
86299	Hepatitis A antibody test	206	892,314	0.03	202	65,480	0.02
86302	Hepatitis C antibody	96	4,272,002	0.14	118	237,491	0.08
86306	Hepatitis, delta agent	724	3,368	0.00	737	177	0.00
86308	Heterophile antibodies	375	136,169	0.00	297	19,347	0.01
86309	Heterophile antibodies	561	28,545	0.00	503	3,221	0.00
86310	Heterophile antibodies	671	6,496	0.00	624	825	0.00
86311	HIV antigen test	382	129,321	0.00	395	8,409	0.00
86316	Immunoassay, tumor antigen	36	18,404,596	0.62	71	774,789	0.25
86317	Immunoassay, infectious agent	143	2,075,419	0.07	166	116,346	0.04
86318	Immunoassay, infectious agent	187	1,144,301	0.04	211	59,611	0.02
86320	Serum immunoelectrophoresis	159	1,732,508	0.06	205	63,066	0.02
86325	Other immunoelectrophoresis	230	625,728	0.02	276	23,542	0.01
86327	Immunoelectrophoresis assay	593	18,002	0.00	647	622	0.00
86329	Immunodiffusion	148	1,995,107	0.07	168	112,430	0.04
86331	Immunodiffusion ouchterlony	303	279,206	0.01	300	19,106	0.01
86332	Immune complex assay	332	218,351	0.01	417	7,406	0.00
86334	Immunofixation procedure	144	2,069,787	0.07	188	78,203	0.03
86337	Insulin antibodies	586	19,393	0.00	626	802	0.00
86340	Intrinsic factor antibody	441	78,353	0.00	483	4,149	0.00

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Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
86341	Islet cell antibody	746	2,390	0.00	768	113	0.00
86343	Leukocyte histamine release	672	6,431	0.00	639	696	0.00
86344	Leukocyte phagocytosis	688	5,165	0.00	676	429	0.00
86353	Lymphocyte transformation	294	301,367	0.01	403	7,989	0.00
86359	T cells, total count	388	123,467	0.00	508	2,989	0.00
86360	T cell ratio	317	249,520	0.01	484	4,110	0.00
86376	Microsomal antibody	201	953,934	0.03	225	51,787	0.02
86378	Migration inhibitory factor	719	3,580	0.00	690	354	0.00
86382	Neutralization test, viral	590	18,916	0.00	615	914	0.00
86384	Nitroblue tetrazolium dye	842	322	0.00	846	18	0.00
86403	Particle agglutination test	190	1,121,323	0.04	182	88,175	0.03
86421	Radioallergosorbent tests	350	175,204	0.01	282	22,486	0.01
86422	Radioallergosorbent tests	76	6,849,946	0.23	77	673,256	0.22
86423	Radioimmunosorbent test IgE	439	80,244	0.00	486	3,996	0.00
86430	Rheumatoid factor test	111	3,446,742	0.12	94	452,406	0.14
86431	Rheumatoid factor, quant	150	1,938,788	0.07	114	251,649	0.08
86485	Skin test, candida	535	34,428	0.00	499	3,491	0.00
86490	Coccidioidomycosis skin test	482	58,294	0.00	431	6,939	0.00
86510	Histoplasmosis skin test	573	22,768	0.00	500	3,365	0.00
86580	TB intradermal test	213	821,452	0.03	149	150,002	0.05
86585	TB tine test	255	436,731	0.01	179	97,725	0.03
86586	Skin test, unlisted	534	34,430	0.00	469	4,882	0.00
86588	Streptocollus, direct screen	237	561,076	0.02	232	47,568	0.02
86590	Streptokinase, antibody	450	72,340	0.00	451	5,973	0.00
86592	Blood serology, qualitative	95	4,289,401	0.14	56	1,051,158	0.34
86593	Blood serology, quantitative	384	127,348	0.00	268	26,670	0.01
86602	Antinomyces antibody	714	3,802	0.00	695	330	0.00
86603	Adenovirus, antibody	629	11,063	0.00	634	730	0.00
86606	Aspergillus antibody	476	60,133	0.00	496	3,577	0.00
86609	Bacterium, antibody	467	63,998	0.00	480	4,361	0.00
86612	Blastomyces, antibody	524	37,383	0.00	529	2,418	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
86615	Bordetella antibody	726	3,270	0.00	738	177	0.00
86618	Lyme disease antibody	138	2,232,102	0.08	174	101,406	0.03
86619	Borrelia antibody	806	846	0.00	802	58	0.00
86622	Brucella, antibody	695	4,505	0.00	681	405	0.00
86625	Campylobacter, antibody	512	40,882	0.00	519	2,740	0.00
86628	Candida, antibody	428	91,206	0.00	411	7,583	0.00
86631	Chlamydia, antibody	461	67,316	0.00	478	4,568	0.00
86632	Chlamydia, IgM, antibody	639	9,805	0.00	644	639	0.00
86635	Coccidioides, antibody	364	150,439	0.01	365	10,256	0.00
86638	Q fever antibody	682	5,406	0.00	689	359	0.00
86641	Cryptococcus antibody	540	32,845	0.00	556	1,947	0.00
86644	CMV antibody	323	232,164	0.01	335	13,198	0.00
86645	CMV antibody, IgM	366	146,542	0.00	407	7,780	0.00
86648	Diphtheria antibody	664	7,048	0.00	673	454	0.00
86651	Encephalitis antibody	715	3,798	0.00	687	367	0.00
86652	Encephalitis antibody	838	368	0.00	830	26	0.00
86653	Encephalitis, antibody	825	519	0.00	821	36	0.00
86654	Encephalitis, antibody	822	574	0.00	820	36	0.00
86658	Enterovirus, antibody	560	28,734	0.00	533	2,405	0.00
86663	Epstein-barr antibody	319	246,286	0.01	327	14,568	0.00
86664	Epstein-barr antibody	316	250,557	0.01	331	13,814	0.00
86665	Epstein-barr, antibody	239	545,715	0.02	265	29,094	0.01
86668	Francisella tularensis	778	1,499	0.00	763	119	0.00
86671	Fungus, antibody	527	36,837	0.00	520	2,724	0.00
86674	Giardia lamblia	491	48,884	0.00	497	3,554	0.00
86677	Helicobacter pylori	181	1,270,323	0.04	194	69,406	0.02
86682	Helminth, antibody	757	2,121	0.00	757	127	0.00
86684	Hemophilus influenza	694	4,653	0.00	723	225	0.00
86687	HTLV I	503	43,568	0.00	452	5,944	0.00
86688	HTLV-II	642	9,658	0.00	633	734	0.00
86689	HTLV/HIV confirmatory test	452	71,874	0.00	475	4,656	0.00
86692	Hepatitis, delta agent	531	35,692	0.00	560	1,880	0.00
86694	Herpes simplex test	408	105,194	0.00	449	6,134	0.00
86695	Herpes simplex test	421	97,457	0.00	453	5,942	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	**Procedure Name**	**Ranking**	**$**	**%**	**Ranking**	**Number**	**%**
86698	Histoplasma	453	71,726	0.00	473	4,726	0.00
86701	HIV-1	207	881,041	0.03	184	87,017	0.03
86702	HIV-2	645	9,202	0.00	641	668	0.00
86703	HIV-1/HIV-2, single assay	361	155,932	0.01	346	11,716	0.00
86710	Influenza virus	501	44,365	0.00	516	2,824	0.00
86713	Legionella	365	147,937	0.00	410	7,661	0.00
86717	Leishmania	846	265	0.00	834	24	0.00
86720	Leptospira	779	1,484	0.00	765	118	0.00
86723	Listeria monocytogenes	878	28	0.00	875	3	0.00
86727	Lymph choriomeningitis	833	411	0.00	832	25	0.00
86729	Lympho venereum	821	583	0.00	810	47	0.00
86732	Mucormycosis	879	20	0.00	881	1	0.00
86735	Mumps	478	59,965	0.00	461	5,191	0.00
86738	Mycoplasma	333	217,617	0.01	336	13,167	0.00
86741	Neisseria meningitidis	836	379	0.00	840	21	0.00
86744	Nocardia	866	81	0.00	865	6	0.00
86747	Parvovirus	579	21,563	0.00	597	1,169	0.00
86750	Malaria	811	793	0.00	804	49	0.00
86753	Protozoa, not elsewhere	685	5,292	0.00	660	535	0.00
86756	Respiratory virus	713	3,907	0.00	705	293	0.00
86759	Rotavirus	675	5,755	0.00	692	334	0.00
86762	Rubella	381	129,873	0.00	412	7,563	0.00
86765	Rubeola	550	30,336	0.00	553	2,052	0.00
86768	Salmonella	794	1,160	0.00	769	113	0.00
86771	Shigella	843	317	0.00	815	42	0.00
86774	Tetanus	610	14,571	0.00	603	1,045	0.00
86777	Toxoplasma	370	140,794	0.00	409	7,755	0.00
86778	Toxoplasma, IgM	505	42,951	0.00	531	2,408	0.00
86781	Treponema pallidum confirm	221	720,566	0.02	242	43,762	0.01
86784	Trichinella	717	3,656	0.00	708	288	0.00
86787	Varicella-zoster	423	95,768	0.00	441	6,487	0.00
86790	Virus, not specified	517	39,967	0.00	515	2,851	0.00
86793	Yersinia	799	1,028	0.00	785	80	0.00
86800	Thyroglobulin antibody	216	763,079	0.03	246	39,638	0.01

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
86805	Lymphocytotoxicity assay	605	15,831	0.00	694	332	0.00
86806	Lymphocytotoxicity assay	670	6,580	0.00	752	135	0.00
86807	Cytotoxic antibody screening	359	157,369	0.01	396	8,321	0.00
86808	Cytotoxic antibody screening	758	2,088	0.00	728	211	0.00
86812	HLA typing, A, B, or C	355	165,829	0.01	436	6,871	0.00
86813	HLA typing, A, B, or C	479	59,801	0.00	589	1,351	0.00
86816	HLA typing, DR/DQ	740	2,564	0.00	784	91	0.00
86817	HLA typing, DR/DQ	551	30,118	0.00	666	495	0.00
86821	Lymphocyte culture, mixed	440	79,368	0.00	544	2,176	0.00
86822	Lymphocyte culture, primed	837	370	0.00	856	9	0.00
86849	Immunology procedure	399	111,922	0.00	358	10,869	0.00
86850	RBC antibody screen	252	444,191	0.01	272	24,597	0.01
86860	RBC antibody elution	655	7,839	0.00	729	208	0.00
86870	RBC antibody identification	468	63,358	0.00	569	1,690	0.00
86880	Coombs test	341	193,525	0.01	271	25,264	0.01
86885	Coombs test	538	33,513	0.00	481	4,275	0.00
86886	Coombs test	532	35,006	0.00	457	5,524	0.00
86890	Autologous blood process	493	48,116	0.00	585	1,363	0.00
86891	Autologous blood, op salvage	847	262	0.00	866	5	0.00
86900	Blood typing, ABO	310	265,038	0.01	216	58,207	0.02
86901	Blood typing, Rh (D)	247	495,690	0.02	221	53,104	0.02
86903	Blood typing, antigen screen	574	22,632	0.00	547	2,159	0.00
86904	Blood typing, patient serum	627	11,153	0.00	611	952	0.00
86905	Blood typing, RBC antigens	626	11,376	0.00	510	2,951	0.00
86906	Blood typing, Rh phenotype	697	4,459	0.00	649	572	0.00
86910	Blood typing, paternity test	872	55	0.00	854	11	0.00
86911	Blood typing, antigen system	880	16	0.00	879	2	0.00
86915	Bone marrow	689	5,101	0.00	843	18	0.00

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
86920	Compatibility test	301	285,547	0.01	354	11,137	0.00
86921	Compatibility test	487	52,120	0.00	536	2,371	0.00
86922	Compatibility test	262	408,370	0.01	314	17,027	0.01
86927	Plasma, fresh frozen	766	1,874	0.00	750	140	0.00
86930	Frozen blood prep	707	4,085	0.00	682	402	0.00
86931	Frozen blood thaw	812	793	0.00	844	18	0.00
86932	Frozen blood, freeze/thaw	636	10,021	0.00	764	118	0.00
86940	Hemolysins/agglutinins auto	587	19,388	0.00	557	1,943	0.00
86941	Hemolysins/agglutinins	710	3,964	0.00	712	271	0.00
86945	Blood product/irradiation	582	20,413	0.00	604	1,015	0.00
86950	Leukacyte transfusion	704	4,185	0.00	772	109	0.00
86965	Pooling blood platelets	644	9,230	0.00	609	997	0.00
86970	RBC pretreatment	702	4,246	0.00	677	429	0.00
86971	RBC pretreatment	804	892	0.00	836	23	0.00
86972	RBC pretreatment	857	196	0.00	852	13	0.00
86975	RBC pretreatment, serum	848	248	0.00	835	24	0.00
86976	RBC pretreatment, serum	855	201	0.00	869	4	0.00
86977	RBC pretreatment, serum	871	56	0.00	870	4	0.00
86978	RBC pretreatment, serum	542	32,081	0.00	572	1,571	0.00
86985	Split blood or products	599	16,779	0.00	554	2,004	0.00
86999	Transfusion procedure	437	82,126	0.00	443	6,396	0.00
87001	Small animal inoculation	807	843	0.00	801	59	0.00
87003	Small animal inoculation	874	54	0.00	867	5	0.00
87015	Specimen concentration	306	272,171	0.01	253	32,153	0.01
87040	Blood culture for bacteria	142	2,082,796	0.07	139	164,772	0.05
87045	Stool culture for bacteria	147	2,006,565	0.07	142	161,408	0.05
87060	Nose/throat culture, bacteria	136	2,239,852	0.08	121	224,825	0.07
87070	Culture specimen, bacteria	46	13,245,205	0.45	51	1,136,388	0.36
87072	Culture of specimen by kit	158	1,761,126	0.06	129	191,103	0.06
87075	Culture specimen, bacteria	176	1,380,260	0.05	171	108,725	0.03
87076	Bacteria identification	312	255,734	0.01	310	17,494	0.01
87081	Bacteria culture screen	191	1,105,243	0.04	148	151,535	0.05
87082	Culture of specimen by kit	276	341,390	0.01	245	39,792	0.01
87083	Culture of specimen by kit	229	639,884	0.02	213	59,346	0.02
87084	Culture of specimen by kit	185	1,165,762	0.04	176	100,795	0.03

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
87085	Culture of specimen by kit	220	729,833	0.02	207	62,550	0.02
87086	Urine culture, colony count	14	42,075,766	1.42	17	3,911,629	1.25
87087	Urine bacteria culture	165	1,606,608	0.05	131	184,933	0.06
87088	Urine bacteria culture	37	18,061,954	0.61	37	1,678,879	0.54
87101	Skin fungus culture	170	1,493,487	0.05	150	149,704	0.05
87102	Fungus isolation culture	167	1,585,198	0.05	155	143,011	0.05
87103	Blood fungus culture	537	34,186	0.00	477	4,586	0.00
87106	Fungus identification	151	1,906,900	0.06	160	132,257	0.04
87109	Mycoplasma culture	506	42,495	0.00	537	2,289	0.00
87110	Culture, chlamydia	369	141,800	0.00	423	7,264	0.00
87116	Mycobacteria culture	387	124,911	0.00	381	9,202	0.00
87117	Mycobacteria culture	231	623,778	0.02	235	45,281	0.01
87118	Mycobacteria identification	419	98,288	0.00	413	7,552	0.00
87140	Culture typing, fluorescent	580	21,404	0.00	512	2,916	0.00
87143	Culture typing, GLC method	851	215	0.00	850	15	0.00
87145	Culture typing, phage method	826	479	0.00	807	48	0.00
87147	Culture typing, serologic	448	73,021	0.00	357	10,987	0.00
87151	Culture typing, serologic	591	18,735	0.00	528	2,445	0.00
87155	Culture typing, precipitin	698	4,432	0.00	643	657	0.00
87158	Culture typing, added method	528	36,689	0.00	462	5,181	0.00
87163	Special microbiology culture	93	4,562,534	0.15	107	318,972	0.10
87164	Dark field examination	566	25,587	0.00	526	2,607	0.00
87166	Dark field examination	585	20,019	0.00	573	1,535	0.00
87174	Endotoxin, bacterial	541	32,574	0.00	504	3,211	0.00
87175	Assay, endotoxin, bacterial	687	5,171	0.00	691	335	0.00
87176	Endotoxin, bacterial	562	27,777	0.00	498	3,507	0.00
87177	Ova and parasites smears	157	1,774,313	0.06	137	167,694	0.05
87178	Microbe identification	184	1,200,006	0.04	212	59,456	0.02
87179	Microbe identification	502	44,021	0.00	550	2,085	0.00
87181	Antibiotic sensitivity, each	214	797,152	0.03	122	222,802	0.07
87184	Antibiotic sensitivity, each	51	11,383,448	0.38	45	1,229,560	0.39
87186	Antibiotic sensitivity, MIC	32	19,870,727	0.67	35	1,761,418	0.56

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
87187	Antibiotic sensitivity, MBC	260	417,512	0.01	259	31,310	0.01
87188	Antibiotic sensitivity, each	455	70,827	0.00	401	8,037	0.00
87190	TB antibiotic sensitivity	548	30,614	0.00	464	4,940	0.00
87192	Antibiotic sensitivity, each	617	13,051	0.00	598	1,124	0.00
87197	Bactericidal level, serum	785	1,342	0.00	792	75	0.00
87205	Smear, stain & interpret	108	3,509,217	0.12	82	616,663	0.20
87206	Smear, stain & interpret	203	925,236	0.03	162	129,988	0.04
87207	Smear, stain & interpret	298	289,459	0.01	262	30,593	0.01
87208	Smear, stain & interpret	391	120,675	0.00	303	18,449	0.01
87210	Smear, stain & interpret	166	1,601,807	0.05	110	295,435	0.09
87211	Smear, stain & interpret	429	89,787	0.00	332	13,692	0.00
87220	Tissue exam for fungi	227	650,915	0.02	164	124,186	0.04
87230	Assay, toxin or antitoxin	127	2,771,503	0.09	165	117,256	0.04
87250	Virus inoculation for test	430	89,185	0.00	485	4,002	0.00
87252	Virus inoculation for test	236	574,678	0.02	307	17,981	0.01
87253	Virus inoculation for test	435	83,231	0.00	491	3,717	0.00
87999	Microbiology procedure	509	41,535	0.00	456	5,677	0.00
88104	Microscopic exam of cells	38	17,289,017	0.58	73	744,091	0.24
88106	Microscopic exam of cells	132	2,529,678	0.09	178	99,701	0.03
88107	Microscopic exam of cells	131	2,570,525	0.09	186	83,168	0.03
88108	Cytopathology	79	6,647,887	0.22	113	252,008	0.08
88125	Forensic cytopathology	829	443	0.00	813	45	0.00
88130	Sex chromatin identification	819	646	0.00	822	32	0.00
88140	Sex chromatin identification	784	1,391	0.00	736	184	0.00
88150	Cytopathology, pap smear	107	3,517,102	0.12	65	866,674	0.28
88151	Cytopathology interpretation	210	842,422	0.03	147	153,410	0.05
88155	Cytopathology, pap smear	189	1,125,461	0.04	132	184,294	0.06
88156	TBS smear (bethesda system)	119	3,112,848	0.11	75	722,445	0.23
88157	TBS smear (bethesda system)	225	669,185	0.02	190	74,671	0.02
88160	Cytopathology	128	2,760,235	0.09	153	145,660	0.05
88161	Cytopathology	174	1,400,900	0.05	197	67,736	0.02
88162	Cytopathology, extensive	156	1,805,546	0.06	240	44,111	0.01
88170	Fine needle aspiration	135	2,304,310	0.08	223	52,946	0.02

(continued)

Table B-1. Allowed Charges and Volume, Sorted by Procedure Codes, 1994 Nationwide (continued)

		Allowed Charges			Volume		
HCPCS	Procedure Name	Ranking	$	%	Ranking	Number	%
88171	Fine needle aspiration	269	391,204	0.01	425	7,177	0.00
88172	Evaluation of smear	133	2,474,582	0.08	191	74,224	0.02
88173	Interpretation of smear	60	8,756,212	0.30	133	177,122	0.06
88180	Cell marker study	66	7,922,693	0.27	98	389,574	0.12
88182	Cell marker study	124	2,970,621	0.10	228	49,668	0.02
88199	Cytopathology procedure	490	51,215	0.00	487	3,893	0.00
G0001	Drawing blood for specimen	3	142,936,295	4.83	1	50,605,064	16.18
P3000	Screen pap by tech w MD supv	84	5,957,709	0.20	43	1,237,376	0.40
P9604	One-way allow prorated trip	35	18,517,099	0.63	8	7,490,846	2.39
P9605	Routine venipuncture	63	8,207,072	0.28	30	2,339,019	0.75
Total		—	2,961,633,011	100.00	—	312,785,748	100.00

Source: 1994 Physician/Supplier Procedure Summary File.

Appendix C:

Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1992-1994

Table C-1. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1994 Nationwide

A relatively small number of lab procedures accounted for the vast majority of test volume. The top 25 procedures accounted for 68 percent of test volume, and the top 100 accounted for 93 percent.

			Volume		Allowed Charges	
Rank	**HCPCS**	**Procedure Name**	**Number**	**%**	**$**	**%**
1	G0001	Drawing blood for specimen	50,605,064	16.18	142,936,295	4.83
2	81000	Urinalysis, nonauto, w/scope	18,589,319	5.94	81,250,559	2.74
3	80019	19 blood/urine tests	17,644,690	5.64	254,418,618	8.59
4	85025	Automated hemogram	15,775,378	5.04	164,955,013	5.57
5	85610	Prothrombin time	11,235,609	3.59	62,422,306	2.11
6	83718	Blood lipoprotein assay	10,171,411	3.25	109,648,793	3.70
7	85024	Automated hemogram	9,392,220	3.00	105,442,911	3.56
8	P9604	One-way allow prorated trip	7,490,846	2.39	18,517,099	0.63
9	82947	Assay quantitative, glucose	6,849,241	2.19	36,663,590	1.24
10	82270	Test feces for blood	6,479,944	2.07	18,866,934	0.64
11	84443	Assay thyroid stim hormone	5,065,988	1.62	112,964,524	3.81
12	85651	RBC sed rate, nonauto	5,034,910	1.61	24,619,270	0.83
13	84153	Prostate specific antigen	4,768,813	1.52	105,377,003	3.56
14	80061	Lipid panel	4,541,265	1.45	90,906,979	3.07
15	83540	Assay iron	4,255,416	1.36	35,747,533	1.21
16	83550	Iron binding test	4,205,972	1.34	46,626,240	1.57
17	87086	Urine culture, colony count	3,911,629	1.25	42,075,766	1.42
18	84436	Assay, total thyroxine	3,840,047	1.23	34,712,217	1.17
19	81002	Urinalysis nonauto w/o scope	3,409,871	1.09	11,350,198	0.38
20	80002	1-2 clinical chemistry tests	3,235,803	1.03	22,044,111	0.74
21	80162	Assay for digoxin	3,171,203	1.01	59,457,910	2.01
22	85029	Automated hemogram	3,030,490	0.97	14,979,486	0.51
23	85023	Automated hemogram	3,015,999	0.96	34,622,548	1.17
24	83036	Glycated hemoglobin test	2,959,179	0.95	38,471,090	1.30
25	80092	Thyroid panel w/TSH	2,935,232	0.94	117,118,714	3.95
26	83735	Assay magnesium	2,909,170	0.93	25,555,961	0.86
27	80016	13-16 blood/urine tests	2,730,400	0.87	38,495,295	1.30
28	80007	7 clinical chemistry tests	2,630,911	0.84	27,307,811	0.92
29	82728	Assay ferritin	2,365,578	0.76	40,075,337	1.35
30	P9605	Routine venipuncture	2,339,019	0.75	8,207,072	0.28
31	80018	17-18 blood/urine tests	2,338,780	0.75	32,643,684	1.10
32	36415	Routine venipuncture for collection of specimen	2,047,380	0.65	2,718,141	0.09

(continued)

Table C-1. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1994 Nationwide (continued)

Rank	HCPCS	Procedure Name	Volume		Allowed Charges	
			Number	%	$	%
33	85027	Automated hemogram	1,905,394	0.61	16,497,447	0.56
34	82948	Reagent strip/blood glucose	1,816,803	0.58	7,567,565	0.26
35	87186	Antibiotic sensitivity, MIC	1,761,418	0.56	19,870,727	0.67
36	80091	Thyroid panel	1,757,267	0.56	30,796,066	1.04
37	87088	Urine bacteria culture	1,678,879	0.54	18,061,954	0.61
38	84132	Assay serum potassium	1,645,480	0.53	10,176,191	0.34
39	80006	6 clinical chemistry tests	1,438,177	0.46	13,821,465	0.47
40	80004	4 clinical chemistry tests	1,339,416	0.43	11,539,807	0.39
41	85021	Automated hemogram	1,320,168	0.42	9,996,461	0.34
42	82985	Glycated protein	1,264,162	0.40	19,236,965	0.65
43	P3000	Screen pap by tech w MD supv	1,237,376	0.40	5,957,709	0.20
44	80003	3 clinical chemistry tests	1,236,750	0.40	10,950,792	0.37
45	87184	Antibiotic sensitivity, each	1,229,560	0.39	11,383,448	0.38
46	82607	Vitamin B-12	1,203,637	0.38	24,866,061	0.84
47	86287	Hepatitis B (HBsAg)	1,199,320	0.38	16,929,951	0.57
48	85730	Thromboplastin time, partial	1,173,692	0.38	9,649,247	0.33
49	84479	Assay triiodothyronine (T-3)	1,171,908	0.37	9,960,477	0.34
50	80185	Assay for phenytoin	1,157,479	0.37	20,988,865	0.71
51	87070	Culture specimen, bacteria	1,136,388	0.36	13,245,205	0.45
52	81003	Urinalysis, auto, w/o scope	1,125,263	0.36	3,459,703	0.12
53	85018	Hemoglobin	1,112,224	0.36	3,495,714	0.12
54	82378	Carcinoembryonic antigen	1,072,170	0.34	25,825,469	0.87
55	85007	Differential WBC count	1,065,941	0.34	4,752,498	0.16
56	86592	Blood serology, qualitative	1,051,158	0.34	4,289,401	0.14
57	83721	Blood lipoprotein assay	1,044,212	0.33	12,713,730	0.43
58	84478	Assay triglycerides	1,033,714	0.33	7,423,853	0.25
59	85595	Platelet count, automated	1,000,571	0.32	6,260,454	0.21
60	85022	Automated hemogram	978,932	0.31	7,357,899	0.25
61	84439	Assay, free thyroxine	923,982	0.30	11,282,620	0.38
62	82977	Assay of GGT	901,600	0.29	7,584,075	0.26
63	85030	Automated hemogram	893,713	0.29	4,345,279	0.15
64	80058	Hepatic function panel	885,961	0.28	8,604,100	0.29
65	88150	Cytopathology, pap smear	866,674	0.28	3,517,102	0.12
66	82465	Assay serum cholesterol	846,852	0.27	4,610,226	0.16

(continued)

Table C-1. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1994 Nationwide (continued)

			Volume		Allowed Charges	
Rank	HCPCS	Procedure Name	Number	%	$	%
67	82746	Blood folic acid serum	834,832	0.27	16,472,511	0.56
68	85014	Hematocrit	829,184	0.27	2,624,153	0.09
69	84520	Assay urea nitrogen	789,125	0.25	4,114,298	0.14
70	80005	5 clinical chemistry tests	780,983	0.25	7,593,869	0.26
71	86316	Immunoassay, tumor antigen	774,789	0.25	18,404,596	0.62
72	80198	Assay for theophylline	768,664	0.25	14,681,037	0.50
73	88104	Microscopic exam of cells	744,091	0.24	17,289,017	0.58
74	82150	Assay of amylase	740,757	0.24	6,398,542	0.22
75	88156	TBS smear (bethesda system)	722,445	0.23	3,112,848	0.11
76	82172	Apolipoprotein	677,324	0.22	13,017,066	0.44
77	86422	Radioallergosorbent tests	673,256	0.22	6,849,946	0.23
78	82962	Glucose blood test	672,910	0.22	2,820,716	0.10
79	85045	Reticulocyte count	640,022	0.20	3,598,346	0.12
80	84480	Total assay, TT-3	637,087	0.20	11,995,454	0.41
81	84066	Assay prostate phosphatase	631,090	0.20	8,078,887	0.27
82	87205	Smear, stain & interpret	616,663	0.20	3,509,217	0.12
83	80008	8 clinical chemistry tests	610,949	0.20	6,725,516	0.23
84	85031	Manual hemogram, complete CBC	604,499	0.19	4,833,730	0.16
85	81015	Microscopic exam of urine	597,169	0.19	2,374,942	0.08
86	80012	12 clinical chemistry tests	562,526	0.18	6,614,767	0.22
87	81005	Urinalysis	533,980	0.17	1,557,843	0.05
88	84165	Assay serum proteins	528,166	0.17	7,803,674	0.26
89	85044	Reticulocyte count	506,106	0.16	2,976,540	0.10
90	82565	Assay creatinine	472,029	0.15	3,107,318	0.10
91	84460	Alanine amino (ALT) (SGPT)	467,627	0.15	3,314,563	0.11
92	86291	Hepatitis BS antibody test	462,125	0.15	6,666,105	0.23
93	82784	Assay gammaglobulin IgM	452,722	0.14	5,457,163	0.18
94	86430	Rheumatoid factor test	452,406	0.14	3,446,742	0.12
95	83970	Assay of parathormone	432,471	0.14	24,090,956	0.81
96	83719	Blood lipoprotein assay	396,442	0.13	5,569,489	0.19
97	82550	Assay CK (CPK)	394,279	0.13	3,410,012	0.12
98	88180	Cell marker study	389,574	0.12	7,922,693	0.27
99	80156	Assay carbamazepine	376,562	0.12	7,416,400	0.25
100	80009	9 clinical chemistry tests	376,462	0.12	4,224,208	0.14

Source: 1994 Physician/Supplier Procedure Summary File.

Table C-2. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1993 Nationwide

The top 25 procedures accounted for 65 percent of all lab test volume in 1993.

Rank	HCPCS	Procedure Name	Volume		Allowed Charges	
			Number	%	$	%
1	36415	Routine venipuncture for collection of specimen	48,265,800	15.74	135,497,975	4.50
2	81000	Urinalysis, nonauto, w/scope	18,852,278	6.15	85,405,008	2.83
3	80019	19 blood/urine tests	16,438,913	5.36	246,710,794	8.19
4	85025	Automated hemogram	13,984,396	4.56	151,969,914	5.04
5	85610	Prothrombin time	9,473,707	3.09	54,675,833	1.81
6	83718	Blood lipoprotein assay	8,587,779	2.80	89,844,492	2.98
7	85024	Automated hemogram	8,229,750	2.68	95,578,370	3.17
8	82947	Assay quantitative, glucose	7,522,219	2.45	42,158,463	1.40
9	82270	Test feces for blood	6,960,858	2.27	21,822,551	0.72
10	P9604	One-way allow prorated trip	6,560,118	2.14	16,246,745	0.54
11	84443	Assay thyroid stim hormone	5,658,796	1.85	134,842,862	4.48
12	84436	Assay, total thyroxine	4,965,191	1.62	47,486,844	1.58
13	83720	Blood lipoprotein assay	4,126,232	1.35	65,944,721	2.19
14	85651	RBC sed rate, nonauto	4,042,112	1.32	20,800,107	0.69
15	85029	Automated hemogram	3,945,367	1.29	20,265,657	0.67
16	82728	Assay ferritin	3,926,730	1.28	67,405,817	2.24
17	87086	Urine culture, colony count	3,659,650	1.19	40,682,127	1.35
18	80061	Lipid panel	3,313,423	1.08	86,797,083	2.88
19	85023	Automated hemogram	3,212,114	1.05	37,907,533	1.26
20	86316	Immunoassay, tumor antigen	2,931,805	0.96	75,323,553	2.50
21	81002	Urinalysis nonauto w/o scope	2,892,913	0.94	9,495,574	0.32
22	83735	Assay magnesium	2,854,347	0.93	25,250,188	0.84
23	86422	Radioallergosorbent tests	2,734,887	0.89	29,853,155	0.99
24	80002	1-2 clinical chemistry tests	2,664,453	0.87	18,323,009	0.61
25	83036	Glycated hemoglobin test	2,561,548	0.84	35,071,404	1.16
26	84479	Assay triiodothyronine (T-3)	2,505,692	0.82	22,269,419	0.74
27	83550	Iron binding test	2,348,973	0.77	26,133,593	0.87
28	80016	13-16 blood/urine tests	2,329,274	0.76	34,050,891	1.13
29	83540	Assay iron	2,280,969	0.74	19,997,185	0.66
30	P9605	Routine venipuncture	2,276,154	0.74	7,675,974	0.25
31	84153	Prostate specific antigen	2,074,443	0.68	57,492,469	1.91
32	84132	Assay serum potassium	2,018,619	0.66	13,179,470	0.44

(continued)

Table C-2. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1993 Nationwide (continued)

Rank	HCPCS	Procedure Name	Volume		Allowed Charges	
			Number	%	$	%
33	82948	Reagent strip/blood glucose	1,999,663	0.65	8,504,679	0.28
34	80007	7 clinical chemistry tests	1,961,876	0.64	20,874,099	0.69
35	80018	17-18 blood/urine tests	1,815,905	0.59	26,335,463	0.87
36	85027	Automated hemogram	1,778,562	0.58	16,063,823	0.53
37	83545	Auto-assay serum iron	1,726,213	0.56	14,252,881	0.47
38	87186	Antibiotic sensitivity, MIC	1,601,060	0.52	18,810,940	0.62
39	83555	Serum iron binding, auto-test	1,577,344	0.51	15,572,022	0.52
40	85021	Automated hemogram	1,527,383	0.50	12,003,196	0.40
41	80162	Assay for digoxin	1,500,217	0.49	28,594,095	0.95
42	82643	RIA assay for digoxin	1,484,203	0.48	28,406,158	0.94
43	87088	Urine bacteria culture	1,482,272	0.48	16,350,297	0.54
44	84478	Assay triglycerides	1,369,727	0.45	10,503,230	0.35
45	85022	Automated hemogram	1,345,521	0.44	10,486,477	0.35
46	87184	Antibiotic sensitivity, each	1,341,970	0.44	12,599,615	0.42
47	82465	Assay serum cholesterol	1,340,117	0.44	7,883,611	0.26
48	80004	4 clinical chemistry tests	1,290,402	0.42	11,395,788	0.38
49	80006	6 clinical chemistry tests	1,277,560	0.42	12,660,696	0.42
50	85018	Hemoglobin	1,206,260	0.39	3,995,811	0.13
51	P3000	Screen pap by tech w MD supv	1,199,699	0.39	5,420,176	0.18
52	80003	3 clinical chemistry tests	1,197,783	0.39	10,918,770	0.36
53	86287	Hepatitis B (HBsAg)	1,182,105	0.39	16,753,154	0.56
54	88150	Cytopathology, pap smear	1,148,221	0.37	4,868,448	0.16
55	87070	Culture specimen, bacteria	1,125,002	0.37	13,555,787	0.45
56	82756	Free thyroxine index (T-7)	1,113,856	0.36	15,237,795	0.51
57	85007	Differential WBC count	1,102,278	0.36	5,149,602	0.17
58	85730	Thromboplastin time, partial	1,048,117	0.34	8,964,471	0.30
59	80092	Thyroid panel w/TSH	999,869	0.33	41,629,806	1.38
60	82607	Vitamin B-12	990,252	0.32	21,419,575	0.71
61	85030	Automated hemogram	963,764	0.31	4,691,201	0.16
62	85014	Hematocrit	955,889	0.31	3,114,349	0.10
63	80058	Hepatic function panel	929,562	0.30	14,583,937	0.48
64	82977	Assay of GGT	914,380	0.30	8,492,436	0.28
65	86592	Blood serology, qualitative	903,467	0.29	4,308,009	0.14
66	80091	Thyroid panel	885,945	0.29	16,638,560	0.55

(continued)

Table C-2. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1993 Nationwide (continued)

Rank	HCPCS	Procedure Name	Volume Number	Volume %	Allowed Charges $	Allowed Charges %
67	84520	Assay urea nitrogen	834,536	0.27	4,410,711	0.15
68	85650	RBC sedimentation rate	822,226	0.27	3,842,153	0.13
69	84439	Assay, free thyroxine	814,808	0.27	10,274,052	0.34
70	85031	Manual hemogram, complete CBC	814,346	0.27	6,796,032	0.23
71	88104	Microscopic exam of cells	743,027	0.24	17,385,453	0.58
72	82150	Assay of amylase	718,002	0.23	6,525,571	0.22
73	80005	5 clinical chemistry tests	712,464	0.23	6,973,685	0.23
74	85595	Platelet count, automated	710,876	0.23	4,556,348	0.15
75	82746	Blood folic acid serum	703,304	0.23	14,561,358	0.48
76	82565	Assay creatinine	693,658	0.23	4,843,467	0.16
77	82172	Apolipoprotein	683,690	0.22	13,435,108	0.45
78	80070	Thyroid panel	678,903	0.22	17,529,037	0.58
79	85044	Reticulocyte count	673,363	0.22	4,188,833	0.14
80	84066	Assay prostate phosphatase	672,419	0.22	8,938,424	0.30
81	82985	Glycated protein	637,753	0.21	6,455,212	0.21
82	81005	Urinalysis	609,189	0.20	1,789,644	0.06
83	87205	Smear, stain & interpret	602,796	0.20	3,526,423	0.12
84	84480	Total assay, TT-3	578,343	0.19	11,271,728	0.37
85	83721	Blood lipoprotein assay	570,941	0.19	9,555,621	0.32
86	80012	12 clinical chemistry tests	560,887	0.18	6,734,010	0.22
87	80185	Assay for phenytoin	550,444	0.18	10,143,815	0.34
88	82378	Carcinoembryonic antigen	544,911	0.18	13,647,038	0.45
89	86430	Rheumatoid factor test	532,323	0.17	4,198,218	0.14
90	86151	CEA assay, RIA or EIA	521,745	0.17	12,876,308	0.43
91	84176	Special protein examination	519,134	0.17	3,731,153	0.12
92	80008	8 clinical chemistry tests	505,193	0.16	5,733,976	0.19
93	84045	Assay phenytoin	505,110	0.16	9,340,493	0.31
94	84435	Assay thyroxine (T-4)	472,066	0.15	4,288,725	0.14
95	84165	Assay serum proteins	453,929	0.15	7,087,018	0.24
96	81015	Microscopic exam of urine	449,464	0.15	1,834,433	0.06
97	86291	Hepatitis BS antibody test	409,702	0.13	6,153,508	0.20
98	80073	Renal panel	406,248	0.13	8,480,409	0.28
99	80198	Assay for theophylline	404,974	0.13	7,743,146	0.26
100	85580	Blood platelet count	402,339	0.13	2,287,957	0.08

Source: 1993 Physician/Supplier Procedure Summary File.

Table C-3. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1992 Nationwide

The top 25 procedures accounted for 66 percent of all lab test volume in 1992.

			Volume		Allowed Charges	
Rank	HCPCS	Procedure Name	Number	%	$	%
1	36415	Routine venipuncture for collection of specimen	47,964,222	15.29	129,199,294	4.44
2	81000	Urinalysis, nonauto, w/scope	20,374,546	6.49	86,420,466	2.97
3	80019	19 blood/urine tests	19,824,524	6.32	231,960,683	7.98
4	85025	Automated hemogram	12,817,634	4.09	132,659,297	4.56
5	82947	Assay quantitative, glucose	8,689,892	2.77	45,879,986	1.58
6	85610	Prothrombin time	8,246,333	2.63	45,453,685	1.56
7	83720	Blood lipoprotein assay	8,027,601	2.56	124,031,339	4.26
8	82270	Test feces for blood	7,530,911	2.40	21,098,349	0.73
9	83718	Blood lipoprotein assay	7,528,234	2.40	81,748,461	2.81
10	P9604	One-way allow prorated trip	7,235,352	2.31	16,178,263	0.56
11	85024	Automated hemogram	7,174,181	2.29	78,865,152	2.71
12	84443	Assay thyroid stim hormone	5,675,239	1.81	129,862,377	4.46
13	84436	Assay, total thyroxine	5,229,539	1.67	47,465,954	1.63
14	82728	Assay ferritin	4,493,018	1.43	82,263,338	2.83
15	85029	Automated hemogram	4,330,935	1.38	20,303,502	0.70
16	86316	Immunoassay, tumor antigen	4,057,942	1.29	103,886,082	3.57
17	85023	Automated hemogram	3,656,394	1.17	41,282,642	1.42
18	87086	Urine culture, colony count	3,523,227	1.12	37,288,637	1.28
19	85651	RBC sed rate, nonauto	3,238,541	1.03	15,828,391	0.54
20	83545	Auto-assay serum iron	3,096,525	0.99	26,090,966	0.90
21	84479	Assay triiodothyronine (T-3)	2,954,824	0.94	24,399,809	0.84
22	82643	RIA assay for digoxin	2,889,141	0.92	54,314,448	1.87
23	81002	Urinalysis nonauto w/o scope	2,558,284	0.82	7,843,998	0.27
24	84132	Assay serum potassium	2,454,488	0.78	15,269,680	0.53
25	80061	Lipid panel	2,378,382	0.76	68,357,260	2.35
26	83036	Glycated hemoglobin test	2,317,340	0.74	30,305,886	1.04
27	80002	1-2 clinical chemistry tests	2,278,620	0.73	14,424,571	0.50
28	P9605	Routine venipuncture	2,133,115	0.68	7,415,853	0.25
29	80016	13-16 blood/urine tests	2,118,922	0.68	28,878,513	0.99
30	82948	Reagent strip/blood glucose	2,107,713	0.67	8,271,807	0.28
31	85022	Automated hemogram	2,042,329	0.65	15,071,240	0.52
32	83555	Serum iron binding, auto-test	1,919,700	0.61	19,843,153	0.68

(continued)

Table C-3. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1992 Nationwide (continued)

Rank	HCPCS	Procedure Name	Volume Number	Volume %	Allowed Charges $	Allowed Charges %
33	82465	Assay serum cholesterol	1,861,409	0.59	10,687,594	0.37
34	85027	Automated hemogram	1,854,177	0.59	15,878,957	0.55
35	82756	Free thyroxine index (T-7)	1,820,493	0.58	23,801,374	0.82
36	85021	Automated hemogram	1,815,986	0.58	13,485,342	0.46
37	85650	RBC sedimentation rate	1,782,859	0.57	8,491,526	0.29
38	80018	17-18 blood/urine tests	1,697,866	0.54	23,130,694	0.80
39	87088	Urine bacteria culture	1,664,865	0.53	17,701,488	0.61
40	84478	Assay triglycerides	1,654,934	0.53	12,914,871	0.44
41	80070	Thyroid panel	1,653,788	0.53	39,423,896	1.36
42	86422	Radioallergosorbent tests	1,621,840	0.52	16,359,687	0.56
43	87184	Antibiotic sensitivity, each	1,537,141	0.49	13,867,542	0.48
44	85018	Hemoglobin	1,514,047	0.48	4,722,503	0.16
45	80007	7 clinical chemistry tests	1,487,694	0.47	15,091,397	0.52
46	87186	Antibiotic sensitivity, MIC	1,455,545	0.46	16,347,199	0.56
47	83735	Assay magnesium	1,427,232	0.45	12,304,490	0.42
48	80004	4 clinical chemistry tests	1,358,242	0.43	11,325,257	0.39
49	88150	Cytopathology, pap smear	1,333,072	0.42	5,646,217	0.19
50	85014	Hematocrit	1,262,259	0.40	3,995,643	0.14
51	85031	Manual hemogram, complete CBC	1,232,007	0.39	9,653,152	0.33
52	85007	Differential WBC count	1,225,159	0.39	5,398,035	0.19
53	87070	Culture specimen, bacteria	1,222,081	0.39	14,138,421	0.49
54	80003	3 clinical chemistry tests	1,198,697	0.38	10,294,035	0.35
55	P3000	Screen pap by tech w MD supv	1,196,460	0.38	6,190,462	0.21
56	80006	6 clinical chemistry tests	1,170,497	0.37	10,904,916	0.37
57	84176	Special protein examination	1,138,721	0.36	7,111,329	0.24
58	84520	Assay urea nitrogen	1,088,027	0.35	5,645,475	0.19
59	86287	Hepatitis B (HBsAg)	1,058,285	0.34	14,612,408	0.50
60	86151	CEA assay, RIA or EIA	1,056,676	0.34	25,469,314	0.88
61	83550	Iron binding test	1,054,040	0.34	13,159,114	0.45
62	80058	Hepatic function panel	1,043,307	0.33	24,530,539	0.84
63	86592	Blood serology, qualitative	1,013,512	0.32	4,410,475	0.15
64	83540	Assay iron	1,007,136	0.32	8,823,854	0.30
65	85030	Automated hemogram	983,400	0.31	3,881,538	0.13
66	84435	Assay thyroxine (T-4)	967,875	0.31	8,878,923	0.31

(continued)

Table C-3. Volume and Allowed Charges for Top 100 Procedures, Ranked by Volume, 1992 Nationwide (continued)

			Volume		Allowed Charges	
Rank	HCPCS	Procedure Name	Number	%	$	%
67	84045	Assay phenytoin	963,223	0.31	17,599,428	0.61
68	85730	Thromboplastin time, partial	959,632	0.31	7,854,298	0.27
69	80073	Renal panel	951,630	0.30	18,846,638	0.65
70	85580	Blood platelet count	921,375	0.29	5,353,413	0.18
71	82607	Vitamin B-12	901,241	0.29	18,725,291	0.64
72	80062	Cardiac evaluation panel	852,244	0.27	26,520,103	0.91
73	85044	Reticulocyte count	851,074	0.27	5,100,014	0.18
74	84420	Assay theophylline	834,557	0.27	15,881,919	0.55
75	82565	Assay creatinine	815,569	0.26	5,528,420	0.19
76	88104	Microscopic exam of cells	806,517	0.26	17,263,143	0.59
77	81005	Urinalysis	806,104	0.26	2,153,103	0.07
78	82977	Assay of GGT	755,795	0.24	6,800,658	0.23
79	85595	Platelet count, automated	750,677	0.24	4,544,933	0.16
80	84439	Assay, free thyroxine	734,327	0.23	8,781,974	0.30
81	82150	Assay of amylase	682,790	0.22	5,952,183	0.20
82	82746	Blood folic acid serum	676,850	0.22	13,449,461	0.46
83	84066	Assay prostate phosphatase	664,933	0.21	8,486,530	0.29
84	87181	Antibiotic sensitivity, each	660,586	0.21	1,853,100	0.06
85	80005	5 clinical chemistry tests	642,993	0.20	5,913,930	0.20
86	80060	Hypertension panel	639,168	0.20	24,736,987	0.85
87	80012	12 clinical chemistry tests	638,386	0.20	7,287,095	0.25
88	86430	Rheumatoid factor test	625,708	0.20	4,706,372	0.16
89	84480	Total assay, TT-3	592,018	0.19	10,876,390	0.37
90	87205	Smear, stain & interpret	584,246	0.19	3,237,653	0.11
91	83930	Assay blood osmolality	572,257	0.18	5,019,464	0.17
92	82172	Apolipoprotein	535,961	0.17	10,543,505	0.36
93	86317	Immunoassay, infectious agent	440,970	0.14	8,378,515	0.29
94	84295	Assay serum sodium	436,965	0.14	2,720,747	0.09
95	80031	Drug monitoring, one drug	431,644	0.14	7,535,417	0.26
96	85048	White blood cell (WBC) count	428,935	0.14	1,452,918	0.05
97	81015	Microscopic exam of urine	417,485	0.13	1,627,991	0.06
98	86319	Immunoassay for drugs	416,300	0.13	10,038,088	0.35
99	84165	Assay serum proteins	409,704	0.13	6,023,301	0.21
100	86256	Fluorescent antibody; titer	402,016	0.13	6,281,138	0.22

Source: 1992 Physician/Supplier Procedure Summary File.

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